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THE VETERINARY JOURNAL.

EDITED BY

PRINCIPAL W. OWEN WILLIAMS, F.R.C.V.S., F.R.S.E.,
PRESIDENT OF THE ROYAL COLLEGE OF VETERINARY SURGEONS;

AND

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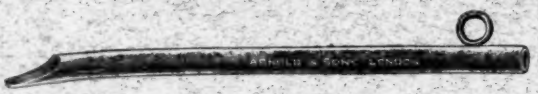

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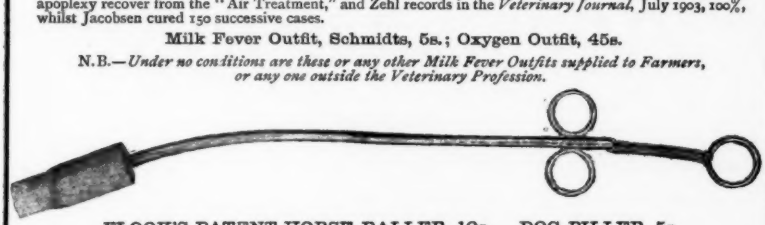

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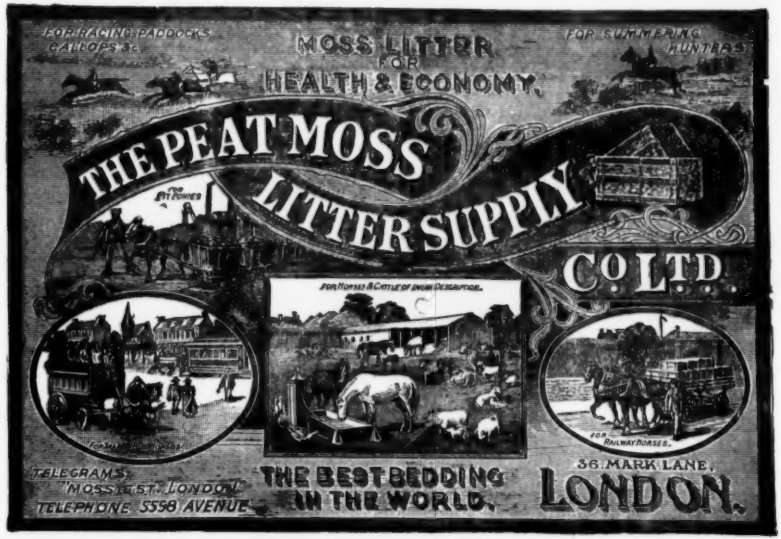
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with which it can be used as Manure in town gardens and in the country.

MAJOR-GENERAL H. THOMSON.

NEW MILITARY MEMBER OF COUNCIL.

MAJOR-GENERAL HENRY THOMSON, C.B., M.R.C.V.S., Director-General Army Veterinary Department, born November 17, 1851. Graduated from the Royal Veterinary College, London, April 19, 1871. Appointed October 15, 1902. Entered the Army Veterinary Department November 1, 1871. Was Inspecting Veterinary Officer in Ireland from 1890 to 1894, Aldershot 1894 to 1897, and Principal Veterinary Officer in India from 1897 to 1902. Served in Egyptian Campaign 1882-4. Action of Kassassin, Battle of Tel-el-Kebir. Promoted Veterinary Surgeon, 1st Class, Soudan, 1884. Battles of Teb and Tamai. Promoted Veterinary Surgeon, 1st Class, ranking with Majors. Made a C.B. May 23, 1900.

THE

VETERINARY JOURNAL

JULY 1904.

Editorial.

VETERINARY PRACTICE IN THE TWENTIETH CENTURY.

How frequently we hear the bitter outcry of melancholy Jeremiahs, that the Veterinary Surgeon will become as extinct as the "Dodo" with the advent of motors. It is an extraordinary phase of mind to us that certain members of our profession cannot get it out of their heads that we are wholly and solely dependent on the horse for patients, and that as they are supplanted by motors so will our calling become defunct.

It is perfectly true that the old-fashioned "horse doctor," or "practical" man, is doomed, as the man in the street nowadays knows as much if not more than he ever did; but if in bygone ages this worthy earned a handsome income by knowing 20 per cent. more than his neighbours, it seems that the process can be repeated.

All this means education and progress, which, we regret to say, certain leading members have set their faces against, and if an example is required we have only to turn to the Continent. We have no hesitation in saying that the French and German Veterinary Student not only is a better educated man than the English, but that his professional training is more thorough and scientific; hence he is able to take a broader view than his British *confrère*, and this we think any unprejudiced person who has lived abroad will acknowledge.

France is the home of motors, and yet the number of students at the schools in that country show a steady increase, and it is unreasonable to suppose that this would be the case if they were not able to make a living. The truth is, our Continental and American brethren have moved with the times, while we have been half asleep, going on in the old jog-trot way. Let any one pick up any live stock or fanciers' journal and see the prices given for small animals down to poultry, and ask himself, If I owned a sixty-guinea cat or a twenty-guinea Dorking cock, and it got ill, would I grudge a half-guinea fee? and yet how many practitioners in England know much about the diseases of the smaller animals? We could count them on our fingers. Our French friends are wiser. Some years ago, travelling in Normandy, we came across a

practitioner in the neighbourhood of Rouen whose practice was entirely confined to poultry. He was an educated gentleman, a member of Alfort, and had made himself a specialist in this branch of the profession; he enjoyed a good practice and comfortable income. In England, some fifty years ago, it was looked upon by many as *infra dig.* to know anything about dogs, and if they were brought to the establishment were sent "to the man in the yard to give a dose of medicine." Now-a-days, as every one knows, dogs are the most remunerative part of a practice, and handsome fees are paid.

We must wake up to the fact that we require a higher standard of education, which can only be obtained by affiliation with a University, and show the public that we are on a level with the other scientific and learned professions, and furthermore, disabuse ourselves of the idea that the horse alone is worthy of our attention. We always remember our Rouen acquaintance, and we would like to know how many of us in England could give an opinion worth having if suddenly called in to an epidemic amongst a flock of valuable prize fowls or rabbits.

Royal College of Veterinary Surgeons.

THE Sixty-first Annual Meeting of the Members of the Royal College of Veterinary Surgeons was held in the rooms of the Highland and Agricultural Society, George IV. Bridge, Edinburgh, on Wednesday, June 1st, the President, Professor W. O. Williams, F.R.S.E., in the chair. There was a good attendance, amongst others present being Mr. F. W. Wragg, Prof. James M'Call, Prof. J. R. U. Dewar, Mr. T. W. Garnett, Mr. John Cameron, Mr. Peter Wilson, Mr. J. M'Kenna, Mr. J. Maclauchlan Young, Mr. Wm. Robb, Mr. F. L. Gooch, Mr. K. P. Rankin, Mr. A. W. Mason, Mr. W. Hunting, Mr. R. Rutherford, Mr. C. Cunningham, Mr. D. S. Rabagliati, Mr. J. Serjent, Mr. J. Seton, Mr. W. S. E. Morton, Mr. James Henderson Mr. J. Dunstan, Mr. J. Eaton Jones, Mr. H. Sumner, Mr. S. Jackson, Mr. G. A. Thompson, Mr. J. Connochie, Mr. J. E. Grey, Mr. J. M'Callum, Mr. Hugh Begg, Junior, Mr. D. Imrie, Mr. R. R. Hoggan, Mr. James Macfarlane, Mr W. S. Barnes, Mr. J. Riddoch, Mr. A. Spruell, Mr. James Peddie, Mr. J. Hutton, Mr. R. E. Montgomerie, Mr. J. W. M'Intosh, the solicitor, Mr. George Thatcher, and the secretary, Mr. Arthur W. Hill.

A number of apologies were intimated from gentlemen who could not attend the meeting. The Secretary read the notice calling the meeting, as extracted from the *London Gazette.* The minutes of last meeting were submitted and approved of on the motion of Prof. M'CALL, seconded by Mr. MASON.

ELECTION OF COUNCILMEN.

The SECRETARY intimated the result of the voting for vacancies on the Council as follows:—

M'Fadyean, - - - - -	1202
Trigger, - - - - -	1024

Villar, - - - - - -	1008
Cope, - - - - - -	990
Simpson, - - - - - -	925
Thompson, - - - - - -	865
Hunter, - - - - - -	856
Garnet, - - - - - -	826

On the motion of Mr. MASON, seconded by Mr. GOOCH, the names were approved of, and a hearty vote of thanks passed to the scrutineers—Messrs. H. A. MacCormack, W. C. Prudames, A. Rogerson, Harry Lomas, A. H. Fowne, J. Share Jones, and W. J. Watt.

ANNUAL REPORT.

The Annual Report and Balance-sheet, having been circulated amongst members, was held as read.

Mr. GOOCH said that at a previous annual meeting in London he had called attention to various items of expenditure, and he was glad to see that attention had been given to this matter. Printing and stationery, for instance, he observed, were down this last year from £215 to £122. Most of the items showed a decrease, which showed, he thought, the great care which their worthy treasurer took of the funds. But he thought they could be too scrupulously careful. If they had a little more in the Annual Report, some of them who lived at a distance would find it advantageous, and it would have the effect of giving more interest to the meeting. He moved that "A verbatim report of the annual meeting be printed with the Annual Report and Balance-Sheet."

Mr. Cameron rose to speak, when the President said that they must first have the motion seconded. Did Mr. Cameron intend to second it?

Mr. CAMERON said he was not prepared to do that. Although he agreed with the spirit of the motion, it was perhaps too sweeping.

The PRESIDENT said that if the motion was not seconded it must fall.

Mr. DEWAR (after a pause, and no other one moving) said that Mr. Gooch came a long way to the meeting, and it was right that his views, and the views of others, should be heard. Without committing himself to the motion, he would second it in order that it might be discussed.

Mr. CAMERON said he would move that a more extended report be given. He had no desire to see his remarks printed verbatim, but he thought all the same that they should have a more extended report of the annual meeting than they had at present.

No one seconded Mr. Cameron's motion, which accordingly fell to the ground. A show of hands was then taken for Mr. Gooch's motion, when it also was declared lost by a majority.

The PRESIDENT said that reports of the annual meetings had always been published in the journals.

Mr. GOOCH said they were always small reports. Why should they not have full reports of the annual meetings printed as well as the Council meetings? The annual meeting was one of the most important meetings of the year. Every other society had its annual meeting printed. If they looked at the agenda of that meeting they would see that there was nothing down but the election of Councilmen and the adoption of the annual report.

Mr. HUNTING said that Mr. Gooch seemed to have overlooked the remarks he made in the earlier part of his speech, where he indicated that

the annual meeting was run by about fourteen members, who, after they met and passed the report, went home. So long as the journals went to the expense of reporting the annual meetings, why should they take it up? (Hear, hear.)

Mr. GOOCH said his intention was solely to make the annual meeting more interesting and attractive to members. With all deference to Mr. Hunting, the annual meeting should be more largely attended than it was. They had now tried both Edinburgh and London, and the most they could get was about 50 to attend out of 3500 members.

Mr. CAMERON said that, if he was in order, he should like to ask what was the cause of the cost of the Register being raised this year from 2s. 6d. to 3s. 6d.? He should like also to know how many copies were sold, because if there were any left over at the end of the year which were not likely to meet a sale, he would suggest that presents of them might be made to the different veterinary associations, the secretaries of which might bring them under the attention of members and thereby get increased interest taken in them. His own idea was that there were names on the Register that ought to have been taken out years before, and addresses also very frequently were unsatisfactory.

Mr. WRAGG said that the Register had been carried on for years at a great loss to the treasury of the College, and it was only this year that they determined to raise the price, so that they should if possible avoid that loss. They had usually about 300 copies. They were all sold out last year. This year they increased the number to 500, but they hoped that they should not have many at the end of the year to give away. They hoped that they would be able to sell them all, and thereby balance the outlay.

Mr. M'KINNA said he had a good deal of sympathy with Mr. Cameron's idea, but members should buy the Register, and then they would be able to point out defects and have them put right. Lately they had been £20 to £30 out of pocket over the Register, and if they could save that it would be so much to the good. He was sure, if members when they saw mistakes on the Register would point them out to Mr. Hill, that they would be put right.—(Hear, hear.)

Mr. GOOCH said that although his motion had not been agreed to, he would move the adoption of the annual report.

Mr. CAMERON said there was one other subject he would like to make a few remarks about, and that was the practical efficiency of their Charters. They could not help coming to the conclusion that they were defective in some respects. For instance their annual meetings were fixed for a certain absolute day. They all knew that that date clashed with another important function in England. Another thing that wanted remedying was the time at which voting papers were given out. He thought six days was far too short a time in which possibly to write away and consult friends before making up their minds how they were going to vote. Before they got back replies the time probably had closed. In some cases the only thing that could be done, as he had done himself, was to fill in the paper and send it away to be filled in by some one whom they could trust to do what was best for the professors.—(Laughter.) He failed to see why the scrutineers should get so long to their work when the important matter of voting was crushed into so short space. He also thought the Christmas examinations should be made permissive and not statutory. He did not see any need for an examination at Christmas at all. It entailed a lot of expense upon the profession for no reasonable benefit. If a student failed at the regular

examination he was better, instead of coming up and scraping through at Christmas, to take another full session, when he might get honours. With honours he would be more likely to make a position for himself in life afterwards.

The PRESIDENT asked Mr. Cameron if he seconded the adoption of the report.

Mr. CAMERON said he understood it was seconded from the platform.

The PRESIDENT said it was not.

Mr. RUTHERFORD, Edinburgh, said that in the report there was a statement that nearly a hundred gentlemen had been before the Council for irregularities as members of the profession. He did not know the exact number, but he thought he was correct in saying eighty-three of one kind and a certain number of another. That meant two separate classes of offences, and he thought there should be an analysis of what the offences were. In simply publishing that statement the Council was acting as a sort of Star-Chamber. They received reports on which they acted, and the man was haled up and condemned; but the rest of the profession got no information as to what the offence was. They ought to be informed. Some of the offences consisted of soliciting and advertising. A rather interesting discussion might be raised as to how the two things went together. He might be a heretic in saying it, but if there was a little more latitude in the matter of advertising—say a young man notifying the public that he was there, and that his services were at their disposal—there would be less of the aggravated evil of solicitation. A clause such as he suggested, giving information as to the nature of the offences, might be added every year to the annual report.

Mr. CAMERON quoted the case of a young man coming to a district where it had been proved that there was no need for another veterinary surgeon dumping himself down there, and going round all the clients of the district and soliciting them. He did not know if that came within the purview of the Registration Committee, but it ought to.

Mr. M'INTOSH, Dalkeith, said he was in general sympathy with the view put forward by Mr. Rutherford. It was advisable not only that information as to offences, but some of the evidence, should be laid before the general meeting, so that members of the profession might have an opportunity of judging whether irregularity had been committed. Personally, he made a complaint last year, and he had reason to think that the matter had not been dealt with as he would have liked, or perhaps the majority of the members would have liked, that it should. He therefore wished to move disapproval of the findings of the Council so far as they bore upon this particular case, and he was quite willing to offer an explanation or read the whole facts of the case if he was in order.

The PRESIDENT.—That would not be in order.

Mr. M'INTOSH.—In that case I wish to enter my dissent against the finding of the Council in this particular case.

Mr. HUNTING then seconded the adoption of the report, which was formally agreed to.

Mr. THATCHER, Solicitor, said that, with the permission of the President and the meeting, he would give information so far as he could upon the points that had been raised. Mr. Cameron spoke of defects which would require a new Charter or the amendment of the existing Charters. Of the three points he mentioned he thought one only would require a new Charter; that was the time of the annual meeting. As to the voting

papers, all that was required was that the Secretary should have the papers seven clear days before the annual meeting. If they wanted more time for their selection it might be obtained by an alteration in the bye-law allowing a longer time for the names to be sent in. That difficulty could be got over in that way. It was the same with the Christmas examinations. The examinations were not fixed by the Charter. If it was found necessary to alter the dates of the examinations it could be done by alteration of the bye-laws governing this matter. He would be a very interested party if they were to try and get a new Charter, because it would mean new profitable work; but he must remind them that it was a very expensive business to get a new Charter. The Government's fees alone when they got the last one amounted to £100 odds. He was unable to give them from memory an exact analysis of the different offences, but he would endeavour to do so as far as he could. He would deal first with the point as to the young man.

At this point Mr. Hunting rose to a point of order. What had this to do with the general meeting?

The PRESIDENT said the question was raised.

Mr. HUNTING said he thought the report was adopted.

The PRESIDENT said that was so, and Mr. Thatcher resumed his seat.

Mr. CAMERON.—Are we to understand that the business is at an end?

The PRESIDENT.—Yes.

Mr. CAMERON expressed disappointment, and said he always understood that the chairman at any stage of the meeting could ask if there were any further remarks to make upon any subject whatever. Some subjects had not been touched upon at all. He had intended, if no other one had done so, to have asked them to return thanks to the Council or to some members of it for the great benefits they had secured for the Army Department of the profession. In connection with that he had also intended to direct attention to another State Department which called for the Council's energies and efforts quite as much, in fact even more so, than the Army Department, the management or mismanagement of which entailed an amount of ridicule and loss of prestige on the members of the profession far greater than were suffered from the Army Department, and that was the Board of Agriculture. He thought that Board certainly called for the Council's oversight, and active efforts to have certain parts of it remodelled and put upon a better footing.

Mr. MASON said that although the business was over he did not think they could disperse without a vote of thanks to the President. This was Professor Williams' second year of office, and although he lived a long way from the Council centre he had been most attentive. They would have seen from the papers how he had conducted the business, and it must have been very hard work to put in so many attendances from such a distance. It was many years since they met in Edinburgh, and he was sure that it must be pleasure to see such a representative gathering of the profession.

Mr. WRAGG seconded, and the vote was cordially passed.

The PRESIDENT, in a word, returned thanks.

Before separating, the meeting, on the motion of Mr. GARNET, accorded a hearty vote of thanks to the Highland Society for the use of the rooms.

ANNUAL DINNER.

The annual dinner was held in the evening under the presidency of

Professor M'Call—the President, to the great regret of the meeting, being confined to the house with a severe cold. There was again a goodly attendance, including several who were not at the business meeting, notably the Earl of Mansfield, President of the Highland Society (who supported the Chairman on the right); Professor Boyce (who supported the Chairman on the left); Mr. Clark, Coupar-Angus; and Mr. John Bell, Carlisle. Mr. F. W. Wragg acted as croupier. Before entering upon the toast list, the Chairman expressed the sincere regret of the President that he could not be present. They had the pleasure of seeing him at the annual meeting, but it was too evident that he was so indisposed as to make it risky for him to come out. He, along with others, advised him not to risk it, and he went by their advice. He regretted that he was not present all the more that it put him in a position that he could not fill anything like what the President could have done.—("No, no.") It was agreed to send a telegram to Professor Williams, expressing sympathy with him in his illness. Among others who sent apologies for inability to be present, were the Lord Provost, Sir Wm. Turner, Sir Jas. Russell, General Sir Chas. Tucker, the Town-Clerk (Mr. Hunter), Prof. Cunningham, &c., &c. The Chairman then intimated an apology from the Secretary of the Highland Society, and, proceeding, proposed in graceful terms the toasts of "The King" and "Her Majesty the Queen and other Members of the Royal Family." Both toasts were cordially pledged.

Mr. HUNTING, in proposing "The Imperial Forces," criticised the action of the Government in buying only four and five-year-old horses, and stipulating for them being absolutely sound. A very large amount of the inefficiency in the South African war was due to defects in the horses—not defects for which the veterinary surgeon was responsible, but allowed to be there in opposition to his advice.

Captain MASON replied, and referred to the improved position which the veterinary surgeon now held in the Army.

Mr. R. RUTHERFORD, in giving "The Medical Profession," said it was usual to speak of the veterinary profession as being younger than the medical profession, but he thought it would be admitted that the health of animals had always been as important a branch of native medicine as that of mankind. He had seen treatment adopted among Arabs and natives of India and Australia which had been handed down to them from time immemorial. He believed the two professions had been running together from the beginning of civilisation, and he hoped they would continue to do so. He hoped the two professions would recognise that they should exist for their mutual benefit, and that nothing should occur to mar the harmony which ought to prevail.

Professor BOYCE, in responding, said the time had come when it was the absolute duty of the Universities of this country to extend their hands to the members of the Veterinary Schools, and to give them every possible facility for carrying on the splendid work entrusted to them. These splendid Veterinary Schools should insist upon sharing the benefits enjoyed by the Universities, and there was no reason why the Veterinary profession should not become an independent faculty, like the Medical profession.—(Applause.)

Professor DEWAR, in proposing "Agriculture," said it was to agriculturists they must look in great part as providing them with means of livelihood. Scotland, more than England, was the nursery for breeding stock for the whole world.—(Applause.)

The EARL OF MANSFIELD, in responding to the toast, said it was in his capacity as President of the Highland and Agricultural Society and as Chairman of Directors that he was there that night. They had heard from Professor Dewar of the extreme importance of British agriculture towards the rest of the world. It had been able to produce stock of the best possible quality, and its history, although not very old, was extremely interesting. A hundred and forty years ago agriculture in the kingdom of Scotland was in a very poor and distressful state. He had some means of knowing that from having perused some most interesting family documents, which, although written in a spirit of congratulation, only too plainly betrayed how lamentable was the general condition not only of the agriculturist himself, but of his animals, his implements, and his dwellings—in fact, of everything that concerned him, especially his rent.—(Laughter.) Rent was always a sore point with the farmer.—(Renewed laughter.) It was the duty of all those interested in agriculture—that was to say, the landlord, the tenant, and the labourer—to do their individual work so as to bring the whole system of agriculture into one great harmonious whole for the benefit of the community.—(Applause.) It was unfortunately only too true that agriculture had been in the descendant rather than in the ascendant for a great number of years. The only thing which had kept them in heart was the magic word "hope." They hoped for better times and for a better season than last, when they had the sad spectacle of seeing standing corn of the best quality out not only in October, but almost into December. At the present time their prospects were hopeful.—(Applause.)

Dr. CHALMERS WATSON proposed "The Royal College of Veterinary Surgeons," coupled with the name of the Chairman, who, in reply, said that frequently during the last thirty years had he replied to this toast, but never before had he felt greater pleasure in doing so, or in trying to say something which might be for the advantage of the profession. Dr. Watson had pointed out that there was but one port to their profession, while there were many ports to the medical profession. He held that that was one of the best and strongest features in their profession.—(Hear, hear.) They sometimes heard it said that students were better taught in London than in Edinburgh and Glasgow. Professor Dewar and himself had always the satisfaction of knowing that if they were better taught they at all events were never behind in the examinations of the College.—(Hear, hear.) That showed, if they had not the facilities that some had, that they still seemed to do their work quite as well.—(Applause.) Some people seemed to have the opinion that although a man worked well and worked earnestly to the best of his ability, unless he was well paid for it he was not doing much good. That was not his opinion. He had had students for forty-five years, and he knew this, that if he had never had a single student he would have had more money to-day. But he had taken up this work for the love of it; some of the happiest hours in his life he had spent in his lecture-room teaching his students. For about twenty years after he started teaching in Glasgow he taught for less than nothing to himself. For twenty years or so he was paid for his work, but for the last seven or eight years he had practically got nothing. Some people said that was not right: they were right to hold that opinion if they thought so, but the man who simply taught because he was paid for it was not the man that was likely to do most good to the profession.—(Applause.)

As had been truly said by Dr. Watson and Professor Boyce, they had come to a point when something must be done, and, speaking for himself and the Glasgow Veterinary College, he was quite convinced that the time had come when private Veterinary Colleges must give way; but he had not come to the opinion that they must give way to be extinguished. He was not inclined, after working over forty years, and after having passed over 2000 graduates into the profession, to take up the position of closing the door and to say no more. Neither was he prepared to say, "If you give me so much money I shall close the door." He was determined, as long as he was able, to lecture; but he was perfectly willing to come to an understanding whereby the Glasgow College might be affiliated with the Glasgow University. He was perfectly willing to agree to that, and he did not think that the terms would be found to be altogether to his advantage.—(Applause.) He was surprised at so many members of the profession seeming to think that this was a wrong step which Professor Williams had taken, and that if they had the power they would prevent him from removing the New College from Edinburgh to Liverpool. He did not understand upon what grounds they could object.—(Hear, hear.) If the removal were to be effected on the conditions that the students there were to be granted a separate diploma, and that the Royal College of Veterinary Surgeons were to have nothing to do with their education, and that a new degree to practise was to be issued, he would be the first man to say not on any consideration would they allow such a thing. But, as far as he understood it, nothing of the kind was proposed, and in these circumstances he could not conceive why they should endeavour to oppose it. So far as he was personally concerned, he should give it all the assistance in his power.—(Hear, hear, and applause.) He could say more, but he did not think it advisable in the circumstances. Professor Williams had his deep sympathy, and he hoped he should live to see him and the New Veterinary College established on a sound footing, and affiliated with the Liverpool University; but at the same time that neither he nor any other power ever should have the privilege of granting diplomas to the students. (Applause.)

Professor DEWAR gave the toast of "The Chairman" in flattering terms, and Mr. John J. Bell also added his appreciation of the Chairman's many excellent qualities, and said it was a special pleasure to him as an old class-fellow and pupil of Professor M'Call's to be present that evening.

The CHAIRMAN having briefly replied, the proceedings, which throughout had been of a most pleasant and harmonious nature, were brought to a close. Songs were sung throughout the evening by Mr. Maclauchlan, Young, Mr. Bell, the Chairman, Mr. Aitken, and others.

The University of Liverpool.

MEETING HELD UNDER THE AUSPICES OF THE LIVERPOOL UNIVERSITY VETERINARY SOCIETY *RE* THE PROJECTED UNIVERSITY VETERINARY EDUCATIONAL CENTRE IN LIVERPOOL.

12th May 1904.

PROFESSOR BOYCE, F.R.S., in the Chair. The following gentlemen were present:—Professor Williams, Messrs. George Morgan, B. Wolstenholme,

F. W. Cosgrove, T. Shepherd, T. O. Martin, F. W. Wilson, Arnold Richardson, W. Berry, G. L. Harber, William Johnston, W. S. Gillespie, R. E. Montgomery, H. E. Annett, Harold G. Rogers, J. Maguire, J. F. Dixon, A. W. Middlehurst, James H. White, J. Park, A. Walker, G. H. Locke, H. G. Bowes, J. Clarkson, Captain F. S. H. Baldrey, Major E. Taylor, Edwin Faulkner, W. Packman, Charles W. Elam, W. A. Taylor, James Sumner, T. C. Howatson, W. Woods, R. G. Roberts, T. G. Duggle, T. W. Garnett, Hy. Sumner, Stafford Jackson, Richard Hughes.

The CHAIRMAN—I call upon Mr. Montgomery to read the notice convening the meeting.

MEMORANDUM.

Mr. MONTGOMERY read the notice convening the meeting as follows:—

"*Re* THE PROJECTED UNIVERSITY VETERINARY EDUCATIONAL "CENTRE IN LIVERPOOL.

"*Notice of Special Meeting.*

"Under the auspices of the Liverpool University Veterinary Medical Society, a special meeting of the profession will be held in the Veterinary Laboratory on Thursday, 12th May, at two P.M.

"It is earnestly requested that all members of the profession interested in the education question will make an effort to be present, in order that the matter may be thoroughly discussed from every point of view, and that the opinion of the profession as a whole may be taken upon the advisability of University training for veterinary students.

"ROBERT BOYCE, F.R.S., *President.*
"R. E. MONTGOMERY, M.R.C.V.S., *Hon. Sec.*

"The Johnston Laboratory,
"The University of Liverpool, *May* 4, 1904."

Mr. MONTGOMERY—I may say that this notice was sent to all the members of the Council, to the Presidents and Secretaries of all Veterinary Associations and Societies, and to the members of the Liverpool University Veterinary Medical Society. I have one letter I have been requested to read:—

"ROYAL VETERINARY COLLEGE INFIRMARY,
"116 STEPHEN'S GREEN, WEST, DUBLIN, *May 7th*, 1904.

"Dear Sir—In reply to your circular communication of the 4th inst., in which it is stated the Liverpool University Veterinary Medical Society wish to obtain the opinion of the veterinary profession as a whole as to the advisability of having a University training for veterinary students, in reading your letter, with the report of the last Council meeting of the Royal College of Veterinary Surgeons relative to Professor Williams' suggested movement of his private Veterinary School from Edinburgh to Liverpool, it appears to me that to a considerable extent the profession, through their appointed body, have replied to the circular letter, and therefore any opinion given by veterinarians attending at the meeting to be held in Liverpool on the 12th inst. cannot be taken as the voice of the profession. Thus it appears to me that the object set forth for calling the meeting cannot be attained. However, I feel satisfied that if any University sees its way of advancing the profession, and sets forth the *modus operandi* of accomplishing the desired object without materially interfering with the collective or individual

rights of the profession, it will be hailed with delight, and receive the support of the profession; but an obscure, indefinite, and problematic scheme, teeming with objections such as Professor Williams submitted, could not be accepted by any corporate body having pretensions to common sense and forethought. Under these circumstances I will not attend the meeting, but will be pleased if you submit this letter to the gentlemen who may be present—Yours truly, J. A. M'KENNY, M.R.C.V.S.

"R. E. Montgomery, Esq., M.R.C.V.S.,
"The University of Liverpool."

The CHAIRMAN.—Well, gentlemen, I think that letter expresses very well the feelings, as far as I can gather it, of a very large number of men. We are here to see if we cannot clear up some of the points that have been brought forward in that letter. There is no doubt that the writer strikes a right note when he says the veterinary profession will welcome any scheme brought forward on a broad basis by the University. I cannot help but think, with the knowledge I possess of educational organisations in this country, that no body of men at the present day can afford to neglect, or would care to thwart, the effort of bringing about higher education, provided that it is done on broad lines, and that the profession concerned has a definite control of the educational programme that such a University draws up. You will recollect, those of you who were present at the last meeting of the Society, that I contrasted the teaching of veterinary medicine in Germany with that in this country. I think it is always good in any new movement to see what other countries are doing. I told you what Germany had done for the veterinary profession. It was a very great deal. I also mentioned to you what had been done in connection with medical training in this country during the last twenty years. We saw the immense strides that had been made in our own country in medical training. So great was the progress made in Germany that the German Veterinary Schools rivalled the Medical Schools. I did not wish to imply for one instant that our Veterinary Schools in this country had not done all in their power to advance the cause of veterinary education.—(Hear, hear.) They have done it.—(Renewed applause.) But they have done it the same way that our own Medical Schools in the past accomplished it, under the most extreme adverse circumstances. My whole object in taking an interest in this movement is to put the Veterinary Schools in such a position that they can take advantage of the same machinery from which the Medical Schools derive such strength at the present time. There is no question that the Veterinary Schools are isolated. Some of them depend to a certain extent on private grants, but most of them depend upon fees. At the previous meeting of the Society we came to the conclusion, I think unanimously, that no teaching institution in the present day can favourably compete with Veterinary Institutions abroad, or with the sister Medical Institutions at home on these lines.

The essence of this movement is in a great measure a financial one, for we know that progress can only be made if there are funds sufficient to enable us to make that progress. Now it has not been an easy thing in this country, as I think you are all aware, to get Universities interested or to get Medical Faculties or any other body interested, or sufficiently interested, in veterinary training, and I think this is a matter to be very greatly deplored. I have always regarded the veterinary profession as only one

division of medical knowledge. Disease in animals does not essentially differ from disease in man. Yet this curious anomaly has grown up in this country, and also on the Continent to a great extent, that the two divisions—the diseases of man and animals—must be kept absolutely apart, but there are signs which indicate that this state is no longer tenable. Firstly, medical men have seen that if they are going to get a wide grasp of disease they must study animal diseases.—(Hear, hear.) We have recently learnt, thanks to the establishment of cancer researches and the study of tropical diseases, that our right-hand men are those taken from the Veterinary side and who know something of the diseases of animals. Has there been a greater right-hand man than the late Professor Nocard? His last public speech was delivered at the Exchange Hotel in Liverpool last May, on the occasion of the opening of these Laboratories, upon the necessity of the advance in the study of veterinary medicine.

Any one who follows the course of medical science can come to no other conclusion than that no real division can be drawn between the study of diseases in man and in animals.

Let us make up our minds on this point, and surely it is now time to bring the fact home to the Universities, and to point out to them that it is their duty to ask the Veterinary Profession to come in and co-operate.

Speaking for this Committee, I am not betraying any breach of confidence when I say that my science colleagues welcome the Veterinary Profession in their midst; there is no idea of exclusion. On the contrary, it would be to the advantage and to the strength of our University if we had the Veterinary men in our midst.

It was with that view before us that the Institute of Comparative Pathology was built, and that for that reason the necessary salary was voted of an independent lecturer in Comparative Pathology; and the hope was expressed that at no distant date we would have the Veterinary men with us, throwing in their lot with the University. As you are aware, much has been said about our imagining that we were offering a very great compliment to the profession in allowing Veterinary students to come and sit alongside our Medical students.

I assure you these are not the motives which men, in this University at any rate, are actuated by.—(Applause.) If you go back to Germany again, we find that the late Professor Virchow—the father of pathology—gave it as his opinion in Parliament that there was no essential difference between the study of the diseases of man and those of animals; what difference there was consisted in the ultimate objects studied in the one case, man, in the other animals. The ideal of a University Veterinary training is by no means a new one. Prince Ludwig, of Bavaria, was one who, as a great friend of the Veterinary Profession in Germany, has always strongly advocated it, and German Universities have already moved in that direction. I have here the plans, which I will pass round to you, of the Leipzig Veterinary School, which is attached to the University. We want to do the same. Have the veterinary teachers in that institution lost prestige, or have they been shorn of any of their powers? They have not. Their powers have been strengthened. They form a strong Faculty in that University, and the wishes and recommendations of that Faculty are respected. Nor is this country absolutely behindhand either, for we see indications of a tendency on the part of a veteran University to ask a Veterinary College to throw in their lot with them.

I must say, gentlemen, when you come to look at the question broadly and financially, Veterinary training, if we can get it through in this country (and we shall all have to stand shoulder to shoulder to get it through) will be an immense gain. There is no doubt that it is a great advantage for Veterinary students to work with students of other professions; a University affords the opportunity of mixing and coming in contact with other men.

The other advantage is the financial support which is obtained by amalgamation with the University. Any one who is conversant with educational finance knows how exceedingly difficult it is to raise money for higher educational institutions.

As you are aware, however, there have been signs of very greatly increased interest in University education, and the newer Universities have obtained immense private bequests, increased Government grants, Municipal and County Councils grants. The University, as the highest educational authority, having obtained this very substantial support, why should not the Veterinary Profession share the advantage which all the other professions have been only to glad to seize? What is the University machinery required for Veterinary medicine?

It may be stated as follows:—

1. The science subjects of Botany, Zoology, Chemistry, Physics, and Physiology.
2. The special subjects of Comparative Pathology and Bacteriology, Veterinary Anatomy, Materia Medica and Pharmacology, Toxicology, Veterinary Hygiene and Dietetics, Veterinary Medicine, Surgery, and Obstetrics.

With regard to the subjects grouped under (1), no Veterinary School possesses the laboratories, equipment, and staff comparable to that found in a modern University.

For instance, the cost of the Science buildings in Liverpool is as follows:—

Botany, ...	£18,000
Zoology, ...	18,000
Chemistry, ...	28,000
Physics, ...	24,000
Physiology and Pathology, . .	32,000
Comparative Pathology, Tropical Medicine, Experimental Medicine and Bio-Chemistry,	10,000
Medical School Buildings, . .	40,000

The Professorships are endowed, and there is a very large sum devoted to the maintenance of each Laboratory. With regard to those fundamental science subjects there is not one botany for the medical student and another for the science student; the science of botany or zoology is taught by the specialist. In the same way there is no veterinary botany or zoology. It is true the types required in veterinary science may be slightly different from the types required by the medical or science student, but fundamentally there is no difference. The same may be said for Chemistry, Physics, and Physiology. All these are taught by those best qualified to teach, namely, by professors and teachers who devote their life to these

subjects. The course of study in these subjects differs very little from that of the Medical student, and the Veterinary student has the advantage of study in especially equipped and endowed Laboratories.

When we deal with the subjects under (2), we find that Universities have already begun to make provision for Comparative Pathology and Bacteriology. The modern University is incomplete without provision for the scientific study of diseases of animals. For this reason we have in this University a fully equipped Comparative Pathology Department, a Comparative Pathology Laboratory and Museum, a large Farm Station, and numerous buildings for experimental animals, and we have an independent lecturer in Comparative Pathology, who has his own assistants. No University is complete without a Chair or an independent lecturer in Comparative Pathology, for it is impossible to be otherwise if disease is to be studied from the University standpoint. The subject, moreover, is most attractive, and will, I feel sure, be supported by the citizens.

Veterinary Anatomy is a subject which is not taught in the Universities, but it is a most important branch of zoology—it is Comparative Anatomy, and it appears to me that the more the anatomy of animals is studied from the comparative standpoint, the more scientific and complete is the study. I think our Universities will be especially adapted for teaching Anatomy with its magnificent zoology buildings and museum (now in process of erection). The lectureship of Veterinary Anatomy should be held by a veterinary man. In every University with a Medical school there is a provision for Materia Medica and Pharmacy, and there is a pharmacist as lecturer, who is not a medical man, but a member of the Pharmaceutical Society, and again one who devotes his whole time to the teaching of pharmacy students. I think it of very great advantage to have the services of this class of man. On the other hand, the application of drugs to disease in animals—Therapeutics—must be done by the qualified Veterinary man. These two points are often confounded. In the University also there exists provision for toxicology, and the science of it is the same whether for animals or man. In connection with the teaching of Veterinary Hygiene there are two aspects. There is the application of the principles of hygiene to the animal, and there is the scientific basis upon which the principles of hygiene are based. In the selection of teachers for hygiene, the proper man to teach the application of hygiene to the animal is the Veterinary expert. But the man best qualified to teach the scientific principles of hygiene is the man who devotes his whole life to the subject of hygiene. Irrespective of his particular degrees or diplomas—the science man is wanted. Let the practical application of the veterinary sciences be done by the veterinary man, the man who is in everyday contact with animals. Let the scientific portion of the groundwork be done by the expert, irrespective whether he is a veterinary, medical, or a science man. A Professorship has to be made in the University for Veterinary Medicine, and it is a post which must be endowed, and our University has made provision for it. The Clinical and Hospital organisation will bear the same relationship to our University as the Royal Infirmary across the way does to our University Medical School.—(Hear, hear.) It will be an independent body organised by the Veterinary Profession in the district. The University will come in touch with it as it does with the Royal Infirmary, in that there will be an independent Board or Faculty as distinct as any other Faculty in the University, composed of all the teachers in the Veterinary School, both

Science and Clinical, which will advise the Senate, and shall be responsible for courses of study, and transact the business usually entrusted by statute to Faculties. This Board will not be a Sub-Faculty of the Medical or any other Faculty; it will be as independent as the Faculty of Medicine or any other Faculty. We have shown clearly that a modern University already has provision on a very extensive scale for a large amount of the teaching necessary for a Veterinary student, and I trust that Universities may take up Veterinary education. They naturally feel diffident unless they see some indication from the Veterinary men themselves, and needless to say they have many applications from teaching bodies for affiliation. In the case of our own University, we have seen a great willingness on the part of the University to help along Veterinary education. I cannot say anything to prejudice what action our Council will take, but it is my hope that in a very short time indeed our University will take steps to secure the power to teach, and if our University will put in a claim that it is a fit body to teach and has the means of teaching, and that it will in no way interfere or try to interfere with the one-portal system, we may, I think, reasonably hope for success. Those who have gone through the mill of obtaining a Charter for a University know what a source of trouble the multi-portal system is. I do not think that any University would care to interfere with the one-portal. Why should it when there is a body which takes upon its shoulders the onus of licensing a man, of sending up their examiners to a school and testing them? I should think a University in many respects would be rather glad that that source of anxiety is removed. The University is essentially a teaching body, charged to give its men the very best education, and in the past the examiners have been both external and internal, but this is in the case of diplomas or degrees granted by itself. Students, however, present themselves for, say, the London University, or the conjoint examination of the Royal College of Surgeons and Physicians, and in that case the examiners have nothing to do with the University. It is clearly understood, if our University did contemplate at any time giving degrees, it is not under contemplation that they would be degrees which would confer a licence to practice. We would act loyally to the one-portal system.

Gentlemen, I have tried to sketch for you our programme, but it has been made difficult owing to the fact that our University has had the whole matter under consideration at the present time, and it is difficult for me to give you any minuter details, but I have given you the main broad facts on which we wish to act. It is for you, and it is for the profession all over the country, to say whether these ideas are good or not which aim at bringing in the Veterinary Profession, and of utilising for their education the great laboratories that are being put up by private and public munificence. If you will now ask questions and discuss the various points which I have—perhaps at too great length—brought before you, we will gain something. I do not wish to leave anything in a nebulous state. We want facts, and probably I will be able to answer any question that is put. At least I shall try to, for after all I am but an outsider in this matter. I now cordially invite discussion.

Professor WILLIAMS.—I never for one moment expected that when I proposed coming to Liverpool to continue teaching I should have caused such a stir in my profession. I have not the slightest intention of discussing any of the remarks—sinister remarks—which have been made in

circumstances, and the flights we have had to make, we have made great strides, but we want to make more.—(Applause.) There is only one point—you will excuse my being very candid. We have over and over again felt that the proprietary Colleges, or Colleges entirely dependent upon fees, have been inadequate to meet the demand. The desire of Professor Boyce is to extend the scope of the School. Will it be a proprietary institution, or will the Faculty of Medicine of this University recognise it as part and parcel of its machinery? There are members of the Veterinary Profession who desire to be better equipped in future, and who will hail this movement with great satisfaction.—(Hear, hear.) There is another point which has been already answered. That is the one-portal entrance. It has been previously admitted by Professor Boyce that this University has no desire to grant a competing licence or a licence to qualify. It needs to be done from the Royal College of Veterinary Surgeons. If that is the case the profession will hail it with great satisfaction. I am sure we in Lancashire and other parts, in discussing this question of higher education, will hail it with satisfaction.—(Applause.)

The CHAIRMAN.—I think perhaps the quickest way is to answer yes or no to the questions. A University cannot recognise a proprietary school. It must be a University School. It is contemplated that instead of the Board which will have the academic management of the Veterinary School being a part of another faculty in the University, that it shall be an independent Board or Faculty. That is something far better.—(Hear, hear.) In other words the University recognises in no uncertain way the status of the Veterinary Profession. It is giving them absolute autonomy.—(Applause.)

Mr. GARNETT (Windermere).—I should like to say a few words with regard to the way the matter appears to me. In the first place, this is supposed to be a meeting of the Veterinary Profession. Well, it cannot be taken, and I do trust that no use will be attempted to be made of it, that this is a meeting of the Veterinary Profession. It would be an absurdity, and I hope, and sincerely hope, that no resolutions will be used, or, if resolutions are passed, that they will go as an immediate call from the whole profession. I have been trying to learn what we have come here to do to-day. I have listened attentively to Professor Boyce, and I fail to see that we are one inch further than our Council was at the last meeting of the Royal College of Veterinary Surgeons. We do not know anything about the constitution of this School, excepting that it is not to be under the control of the Veterinary Profession.

The CHAIRMAN.—Might I point out to Mr. Garnett the notice convening this meeting? Might I read it for the benefit of the gentlemen present? "It is earnestly requested that all members of the profession interested in the education question will make an effort to be present, in order that the matter may be thoroughly discussed from every point of view, and that the opinion of the profession as a whole may be taken upon the advisability of University training for Veterinary students." We are not discussing a plan or programme at the present moment. What we wish to do is to gain the opinion of you, sir, and of others as regards the advantages to be gained by University training.

Mr. GARNETT.—That I grant you; but I call Professor Boyce's attention to the first paragraph, which he has omitted to read,—that is, "A special meeting of the profession." It is not a special meeting of the

Liverpool University Society, but a special meeting of the profession. I maintain we are not entitled to call it that.

The CHAIRMAN.—I quite agree with you on that point. You may perfectly rest assured that I have not in anything I have done betrayed any confidence at any time. I do not think that I would, or that any gentleman here would, regard this meeting as it is as any indication necessarily of the feelings of the whole profession; but I do think at this stage it is our duty to feel the pulse of as many men as we possibly can, and go on bit by bit.—(Cheers.)

Mr. GARNETT.—I certainly endorse that last remark of Professor Boyce's. My only reason for laying stress upon my first remarks was that I was not content with the voice of opinion in this room at the present time. I wanted a larger voice. I wanted the voice of the Veterinary Profession.

The CHAIRMAN.—Certainly.

Mr. GARNETT.—I think we are at one on this point. That it is not a meeting of the Veterinary Profession, and that no use can be made of it as a representative meeting of that profession. But what made me especially refer to that matter was that at the last meeting of our Liverpool University Veterinary Medical Society a resolution was passed before the paper had been discussed in any shape or form. When I spoke upon the remarks that Professor Boyce had made I particularly laid stress upon the point that I withheld further remarks, and it was, I thought, understood at the time that it would be thoroughly discussed. Well, the valuable contribution was received here. It passed without any discussion at all. Much to my surprise, a resolution was passed at the last meeting that I certainly for one felt taken aback at, seeing that the paper had not been discussed. With regard to the future of education of the Veterinary Profession in regard to Universities, I think that all members of the Veterinary Profession know the point I have always taken up, and have always been an advocate of, even before I graduated from the College at all. It has been one earnest desire for admission to Universities. Every member acquainted at all with the Veterinary Profession during the last eighteen or nineteen years must be perfectly well aware of that. For that reason I was delighted when I heard this proposition mooted for attachment to the Liverpool University. But, gentlemen, when we have talked about this point—the attachment to the Liverpool University—we are in the same position that our Council was in at its last meeting. They do not know anything at all about it. Professor Boyce has told us nothing, and we have not heard anything from Principal Williams. In fact, I took Professor Boyce's words down. All that we can expect from the University is a willingness to help on the part of the University.

The CHAIRMAN—I do not gather that.

Mr. GARNETT—So we are to anderstand that it is under consideration, but beyond that we have nothing to do. I am opposed to the Veterinary Profession tying itself up to any,Medical School or any University, without the interests of the Veterinary Profession and the agriculturists of the country at large are safeguarded from the governing body. We have something more in this instance to consider than that of our own profession. We have the country at large to consider, and no one will gainsay me when I state that it is the province of the Veterinary Schools in England, Scotland, or Ireland to train, and they are the only fitted places

connection with this movement. I appeal to your memories, and I think your memories will tell you that for many years past it has been my ambition to place the Veterinary Profession in every respect on an equality with the members of the other learned professions. Years ago I had no hope of a University ever recognising Veterinary teaching. It seemed too hopeless. My first effort was to try and get a Veterinary degree which should indicate that we were other than horse, cow, and dog doctors. In the year 1899, in the Council of the Royal College of Veterinary Surgeons, I brought forward the following resolution:—"That powers be obtained by the Council of the Royal College of Veterinary Surgeons to grant an additional degree to members of the Royal College of Veterinary Surgeons to be known as that of 'Veterinary Officer of Health'; that this degree be granted to members of the Royal College of Veterinary Surgeons only, and after passing an examination in the following subjects" (See *Veterinary Journal*, 1899). It was strongly opposed by some of the leaders of the profession, and it was lost. I concluded, from the mistake which was made at that meeting, it was hopeless to ask the Council, in its then present state of opinion, to obtain powers to grant a higher degree. I then turned my attention to University matters. I interviewed professors and others connected with Edinburgh University and with Aberdeen University. I gave an address at Aberdeen University, because I am not, as the Scotch people say, "thirled" to a University. I am working for my profession. Whichever University will help my profession, that is the University I shall work with.—(Cheers.) The Principal of Aberdeen University, a very well-known man, Principal Lang, on being called upon said he was sure Principal Williams had made out a very strong case indeed for the consideration of the Universities. He could only say of the University he represented that they were quite open, they had a candid mind for all that implied the extension of University instruction. These were the remarks by the Principal of the University of Aberdeen, who is deeply interested in the subject. A still further stage has gone, and I read you an abstract from a portion of an Ordinance of the University of Edinburgh: "Whereas it is expedient that the University of Edinburgh, in order to improve and encourage higher Veterinary education, should institute degrees in Veterinary Medicine and Surgery, and frame regulations for the same." . . . . "These shall be administered by a committee, to be called the Veterinary Degree Committee." This is in progress at the present time in Edinburgh University. The ordinance goes on with details about the education, and there is one most important paragraph that I will read:—"A candidate should be admitted to the degree of Bachelor of Veterinary Medicine and Surgery only after he has fulfilled the following conditions:—(*First*), He must have been engaged in Veterinary study for not less than four academic years. (*Second*), He must be a member of the Royal College of Veterinary Surgeons, or hold a Veterinary diploma recognised by the said College, and granted in a British possession or foreign country entitling him to be registered in the Register of the Royal College of Veterinary Surgeons." You have heard from Professor Boyce this afternoon that this University from the beginning admires our single portal system, and has no intention whatever to interfere with the sole granting of licences by the Royal College of Veterinary Surgeons. All that is asked is to make use of the magnificent equipment of this University for the higher education of Veterinary Surgeons. We do not desire here to give them

a degree which would entitle them to practise. We desire to teach them. We only ask the Royal College of Veterinary Surgeons to permit the students from this University to take their chance with the students from the other Veterinary Colleges. If the Examining Board does not think these men are fitted to pass into the profession they can reject them. The Royal College of Veterinary Surgeons know perfectly well no man can attend his examinations until he has attended for so many terms and so many classes. All that is to be fulfilled in Edinburgh, the same as I trust it will have to be fulfilled in London very soon, and the same as it ought to have been from the beginning in Dublin. It was a mistake, in my opinion, to make the Veterinary College apart from the University of Dublin when they were starting a new College—(hear, hear); so you see, Gentlemen, that no University has any desire to grant a licence. They only wish to assist in the education of the students of the future. I have nothing more to say, but simply to make this statement to you—to leave it to your own sound judgment. Should we remain, as it is said, digging our own little plot, or should we assist in the reaping of the large fields which have been dug by others? I do not know. It is for the profession to choose.—(Applause.) Perhaps I might crave another minute to read another extract if you will permit me:—"It would ill become me as a teacher in a Veterinary School to say one word against the teaching in these schools. They do good work as far as their limitations permit, but they have their limitations, and there's the rub. To maintain a fully equipped Veterinary School with an adequately remunerated staff of teachers entails of necessity a very heavy expenditure. At present the schools have to depend upon the fees paid by students, and upon the money earned in treatment of animals, for their upkeep and support. The result is inevitably a fight for students and semi-starvation of all activities. No research work—a badly paid staff, and teaching reduced to a mere cram." That speech was delivered in October 1902 by Professor Bottomley at the opening of the Royal Veterinary College, Camden-Town, London.

Mr. HUGHES (Oswestry).—I am very pleased that you invite a very candid and open discussion on this subject, Mr. Chairman. There is no denying the fact that the Veterinary Profession tries to be evolutionary—to develop. In 1876 the curriculum was extended from two years to three. I am sure the profession in general will hail the desire to extend and make our teaching establishments more thorough and better equipped. We have been at a disadvantage. It is a very humiliating admission to make, considering the wealth of the population, that the Government has not seen fit to make grants to all Veterinary Colleges, and to recognise the members of the profession as being the only men competent to adjudicate upon and discuss the various diseases of animals. Not only so, but there are points which are of vital importance to mankind, There is only one pathology. How can the doctor study anthrax and other diseases without having suitable opportunities for doing so? It is the same thing in the case of tuberculosis. Considering the wealth of our country, and also the importance of the matter with regard to the health of the population, it is a lamentable admission to make that the Government have not seen fit to endow chairs in Veterinary Pathology, and to give us their help and assistance. Instead of doing so, that august body, the Board of Agriculture, seems to delight in putting us down a peg or two, and in appointing men who are not competent to discharge their duties. Considering the adverse

circumstances, and the flights we have had to make, we have made great strides, but we want to make more.—(Applause.) There is only one point—you will excuse my being very candid. We have over and over again felt that the proprietary Colleges, or Colleges entirely dependent upon fees, have been inadequate to meet the demand. The desire of Professor Boyce is to extend the scope of the School. Will it be a proprietary institution, or will the Faculty of Medicine of this University recognise it as part and parcel of its machinery? There are members of the Veterinary Profession who desire to be better equipped in future, and who will hail this movement with great satisfaction.—(Hear, hear.) There is another point which has been already answered. That is the one-portal entrance. It has been previously admitted by Professor Boyce that this University has no desire to grant a competing licence or a licence to qualify. It needs to be done from the Royal College of Veterinary Surgeons. If that is the case the profession will hail it with great satisfaction. I am sure we in Lancashire and other parts, in discussing this question of higher education, will hail it with satisfaction.—(Applause.)

The CHAIRMAN.—I think perhaps the quickest way is to answer yes or no to the questions. A University cannot recognise a proprietary school. It must be a University School. It is contemplated that instead of the Board which will have the academic management of the Veterinary School being a part of another faculty in the University, that it shall be an independent Board or Faculty. That is something far better.—(Hear, hear.) In other words the University recognises in no uncertain way the status of the Veterinary Profession. It is giving them absolute autonomy.—(Applause.)

Mr. GARNETT (Windermere).—I should like to say a few words with regard to the way the matter appears to me. In the first place, this is supposed to be a meeting of the Veterinary Profession. Well, it cannot be taken, and I do trust that no use will be attempted to be made of it, that this is a meeting of the Veterinary Profession. It would be an absurdity, and I hope, and sincerely hope, that no resolutions will be used, or, if resolutions are passed, that they will go as an immediate call from the whole profession. I have been trying to learn what we have come here to do to-day. I have listened attentively to Professor Boyce, and I fail to see that we are one inch further than our Council was at the last meeting of the Royal College of Veterinary Surgeons. We do not know anything about the constitution of this School, excepting that it is not to be under the control of the Veterinary Profession.

The CHAIRMAN.—Might I point out to Mr. Garnett the notice convening this meeting? Might I read it for the benefit of the gentlemen present? "It is earnestly requested that all members of the profession interested in the education question will make an effort to be present, in order that the matter may be thoroughly discussed from every point of view, and that the opinion of the profession as a whole may be taken upon the advisability of University training for Veterinary students." We are not discussing a plan or programme at the present moment. What we wish to do is to gain the opinion of you, sir, and of others as regards the advantages to be gained by University training.

Mr. GARNETT.—That I grant you; but I call Professor Boyce's attention to the first paragraph, which he has omitted to read,—that is, "A special meeting of the profession." It is not a special meeting of the

Liverpool University Society, but a special meeting of the profession. I maintain we are not entitled to call it that.

The CHAIRMAN.—I quite agree with you on that point. You may perfectly rest assured that I have not in anything I have done betrayed any confidence at any time. I do not think that I would, or that any gentleman here would, regard this meeting as it is as any indication necessarily of the feelings of the whole profession; but I do think at this stage it is our duty to feel the pulse of as many men as we possibly can, and go on bit by bit.—(Cheers.)

Mr. GARNETT.—I certainly endorse that last remark of Professor Boyce's. My only reason for laying stress upon my first remarks was that I was not content with the voice of opinion in this room at the present time. I wanted a larger voice. I wanted the voice of the Veterinary Profession.

The CHAIRMAN.—Certainly.

Mr. GARNETT.—I think we are at one on this point. That it is not a meeting of the Veterinary Profession, and that no use can be made of it as a representative meeting of that profession. But what made me especially refer to that matter was that at the last meeting of our Liverpool University Veterinary Medical Society a resolution was passed before the paper had been discussed in any shape or form. When I spoke upon the remarks that Professor Boyce had made I particularly laid stress upon the point that I withheld further remarks, and it was, I thought, understood at the time that it would be thoroughly discussed. Well, the valuable contribution was received here. It passed without any discussion at all. Much to my surprise, a resolution was passed at the last meeting that I certainly for one felt taken aback at, seeing that the paper had not been discussed. With regard to the future of education of the Veterinary Profession in regard to Universities, I think that all members of the Veterinary Profession know the point I have always taken up, and have always been an advocate of, even before I graduated from the College at all. It has been one earnest desire for admission to Universities. Every member acquainted at all with the Veterinary Profession during the last eighteen or nineteen years must be perfectly well aware of that. For that reason I was delighted when I heard this proposition mooted for attachment to the Liverpool University. But, gentlemen, when we have talked about this point—the attachment to the Liverpool University—we are in the same position that our Council was in at its last meeting. They do not know anything at all about it. Professor Boyce has told us nothing, and we have not heard anything from Principal Williams. In fact, I took Professor Boyce's words down. All that we can expect from the University is a willingness to help on the part of the University.

The CHAIRMAN—I do not gather that.

Mr. GARNETT—So we are to anderstand that it is under consideration, but beyond that we have nothing to do. I am opposed to the Veterinary Profession tying itself up to any Medical School or any University, without the interests of the Veterinary Profession and the agriculturists of the country at large are safeguarded from the governing body. We have something more in this instance to consider than that of our own profession. We have the country at large to consider, and no one will gainsay me when I state that it is the province of the Veterinary Schools in England, Scotland, or Ireland to train, and they are the only fitted places

where special training for veterinary work can properly be undertaken. There are branches of our medicine which are so closely allied to the medical profession that it is possible the two might be drawn together in their early stage; but even then we have to specialise. We could not for a moment be taking a medical course of botany, for instance. We want special treatment. We want special study with regard to poisonous plants and other things, and roots deleterious to animals, which are entirely outside the scope of the medical world. What we want is this—that wherever a Veterinary College is established it shall be under the control of the Veterinary Surgeon—of the corporate body of the Royal College of Veterinary Surgeons. It is absurd to think that any medical man can train or teach, from beginning to end, students of Veterinary Surgery. If we do become attached to the University, which I sincerely trust we may, that is a different matter altogether, but even in that event we must protect ourselves. We must have a director at the head to conduct the Veterinary Medical School, the same as, I suppose, you conduct the Medical School in this University.

The CHAIRMAN—No, sir.

Mr. GARNETT—It must be absolutely under the control of the Veterinary Surgeons. The resolution which was passed at the last meeting of the Council of the Royal College of Veterinary Surgeons was really the only sensible one. I am only expressing my own views. I do not express the views of anybody else. There is another thing in which the Liverpool University scheme, to my mind, presents an interest. This is with regard to the private practitioners. Private practitioners are to be teachers in the School. That came out at the last meeting of the Council. I do not think it is at all feasible for private practitioners to send their cases, say, from their own yards, where they can see their animals at home, up to a centre perhaps half a mile or a mile away, and give them proper attention. This is a business part of the arrangement that I feel sure will break down very quickly indeed—(Hear, hear)—that is, so far as the clinical work is concerned. Then with regard to these post-graduate courses. I am totally opposed to them as a member of the Veterinary Profession, and we must, as the Veterinary Profession, safeguard the interests of the agriculturists of this country. I am entirely opposed to post-graduate courses given by medical men in Universities. That is an absurdity to my mind. I cannot comprehend any educated body of men undertaking to teach or perform work which they must know, and it is apparent on the face of it, they are quite incompetent to teach, in these so-called higher degrees. The membership degree of the Royal College of Veterinary Surgeons will enable a man to undertake all the duties of inspection and to teach medicine as a whole. If we want a higher degree, I am at one, and always have been, with Professor Williams, with regard to the College getting a new Charter and Institute for a post-graduate course for State Medicine pure and simple, as being the recognised body for the control of diseases in animals, keeping it in our own hands. We have always managed to get along very well, and I think we always will, though if we can become attached to a University under proper guidance and control I should certainly advocate it.—(Hear, hear.)

The CHAIRMAN—I think Mr. Garnett has in the last paragraph really stated what we have ourselves stated, viz., that he is in favour of a Veterinary School attached to a University under proper veterinary control and guid-

ance. Have I, in anything I have said, gone against that idea?—(Cheers.) Why, only one minute ago I clearly stated that the veterinary administration should be under a Veterinary Board, composed of the teachers in the subjects of Veterinary matters, just as the Medical Faculty, which is composed of the teachers in that Faculty, advises the Senate and the Council. It would act just as does the Science Faculty, which has the administration of the science Subjects for engineers, chemists, and so on, and which advises the Senate and the Council. The essence of any movement of this kind is that it comes from the profession, that it is a professional movement, and that the profession have the control of it. Are medical men so anxious to have the control of Veterinary medicine? I am sure I am speaking for medical men. I have never heard it stated for a moment that they have that desire. I must, however, differ from Mr. Garnett, if I may say so, in thinking there is such a great difference between the pharmacology, materia medica, or whatever it is, of the veterinary surgeon and the medical man. He mentioned poisonous plants. I would like him to point out the exact difference between the poisonous plants which the veterinary students study and those which the Medical students study.

Mr. GARNETT.—The yew.

The CHAIRMAN.—Do you study all the properties of the *Taxus baccata*?

Mr. GARNETT.—Men do not eat yew.

The CHAIRMAN.—But are not berries eaten by children, and is it not necessary to know what are the poisonous berries? Surely you must know that we have cases of poisoning in men as you have in animals? I would not like to commit myself, but probably we have as many cases of eating poisonous berries in men as you have of eating poisonous plants in animals. We have not, however, at this stage come together to discuss details of this minute nature, though we may fitly discuss them later. I see at the back of your mind that you are really cordially in favour of a University Veterinary School, provided it is a proper school. I would not countenance any University Veterinary School unless it was under Veterinary control. There is the point which you raised, that the School must be under a head. The Medical Faculty is not under a head in any University, as far as I know. The essence of the University system is to abolish the one man *régime* which has in the past led to such mischief in education; it led to the well-known usher system in all isolated teaching schools. It is what we want to avoid. A man who teaches a subject should have only one authority over him in a University. That is his Faculty, and through his Faculty the Senate and the Council. He wants no one man to be a go-between. The University Council is ultimately responsible for the student. Mr. Garnett has also gone a little out of his way when he referred to the Medical profession giving post-graduate degrees to veterinary men. I have not noticed that.

Mr. GARNETT.—No; it was the general question of University teaching for Veterinary surgeons that we are here to discuss. I understood that there were veterinary courses given by the Uiversities—practically post-graduate courses.

The CHAIRMAN.—You may have read so, and I will take your explanation and shall answer it. I think that when we look back we must be a little magnanimous. As you know, Mr. Garnett, and I think many members in this room know, certain medical men have been obliged to study a good deal in various subjects. I will take the case of Tropical Medicine. There is my friend Lieutenant-Colonel Bruce, for instance, who has done an

immense amount of work with regard to the diseases of animals in connection with the discovery of trypanosomiasis in horses. It so happens that a great number of medical men in Universities are working upon trypanosomiasis, and when we have information and material at our disposal is it not our duty, whether we are veterinarians or not, to offer that material and those engaged in the researches to those who choose to come forward?—(Hear, hear.) You need not think anything of our diploma. We do not ask you to. That is simply the hall mark which says that you have been here, and that you have taken certain courses. Surely it is a very narrow conception of education to leave degrees, as I think you had in your mind, to one body. Consider what that would mean in medicine? Imagine the Royal College of Surgeons and Physicians as the only body in this country to grant degrees or diplomas as you term them. That surely would be an extraordinary phenomenon, and would take us back to a very early period. The essence of improvement is for Universities to go on striving with one another to elevate their standard of teaching, and to conduct their teaching in the best and most proper way. The question of degree is a secondary matter. But do not let that be the monopoly of one particular body.

Mr. GARNETT.—I think I must have misunderstood you. I thought you said you were clearly in favour of the one-portal system. Now, Professor Boyce says he is not in favour of the one-portal system.

The CHAIRMAN.—I do not think, Mr. Garnett, that that is at all a fair deduction to make from what I have said. I think every gentleman in this room knows that I have said that there should be a one-portal system; but you are confusing the diploma which carries a licence to practise with a degree which does not carry a licence to practise.—(Cheers.) There is a fundamental difference. You are an example of gentlemen who unthinkingly criticise, but I want you to bring forward objections so that you may get them out of your mind.—(Applause.) The two things are distinct. A degree is a cachet or label given by an educational authority, which says that by that cachet a certain standard has been reached. It does not necessarily say that owing to the standard which you have reached you are entitled to practice. Let me make that clear. In Germany there is what is known as the State Examination in Medicine. That is to say, no medical man can practise and attend patients unless he has a licence; but, on the other hand, the Universities give between them a very large number of degrees in medicine. These degrees, however, do not carry a licence to practice, although the man who obtains a degree may have studied eight years instead of five years, say, necessary for the licence. That is an essential difference. I do ask you again to consider the whole matter broadly.—(Applause.)

Mr. ELAM.—I think, after the explanation which has been given to us, that the time has come when the profession will have to speak up. The only way to find out what is the real opinion of the profession is for each man to speak up for himself. I shall, for one, think, as one of the older members of the profession, we are greatly indebted to the University for holding out the right hand of fellowship to us, and offering to let us come in. Forty years ago, in London, we had many advantages; but the young men of to-day have many advantages we did not possess. I think Professor Boyce has shown that advantages will accrue to the Veterinary Profession by their joining hand in hand with the Medical Profession. I think we should fall in, and get all the advantages which have been offered to us by the education at hand.

Mr. SUMNER.—I think there is one thing in which we should set ourselves right with the members of the profession here present. I fancy that the difficulty is one which weighs with Mr. Garnett. Professor Boyce has done a very great deal in elucidating the point with regard to coming in contact with Professor Williams, but he has not given us an account of the difficulties of doing so, and the abandonment of our original scheme, which is a very important factor at this particular meeting I take it. I do not know whether I shall be in order in explaining.

The CHAIRMAN.—Absolutely.

Mr. SUMNER.—Well, gentlemen, as you all know, there is a laboratory in Liverpool, or a part of it, applicable to our uses. I was invited to co-operate with Professor Boyce and Dr. Annett as to the best means of employing that particular laboratory to the uses of the Veterinary Profession, and in the furtherance of studies in Comparative Pathology. Perhaps I was honoured in being invited to the laboratories of these gentlemen. At any rate I have the interests of my profession at heart. I felt it was not an opportunity to be lost. I felt that Mr. Jackson and Mr. Eaton Jones, who were invited to sit on the committee, viewed it in the same light. Whatever I have done on that committee, and whatever I have done in relation to this Veterinary scheme, I thought until recently I was acting for my fellows and for the members of the profession here. It was suggested it was an opportunity for research. We suggested the formation of a Society, but as to the numbers who might join it, it was most difficult to form a conception. The Society was formed. I had every reason to believe that it was going to meet with a definite want. Following upon the first meeting of the Society, Professor Williams, whom I met in Manchester, told me, not for myself, but as one representing the Veterinary Surgeons of Liverpool, how much he appreciated the Veterinary effort in Liverpool. He threw out the suggestion what a pity it was that we could not incorporate a College with that particular effort. Six years ago we were asked to confer with the Senate in this University as to the institution of a Veterinary School. We unanimously agreed it was not in the best interests of the Veterinary Profession to start another school; but when we had a direct offer to transfer a teaching centre to another centre, when there was one within forty miles, we never supposed for one moment there would be any ill-feeling about it, or that there could have been this party spirit. A meeting was arranged, Professor Williams met us, and the whole thing was gone through. Professor Williams from the very first grasped the whole aspect of our University aspirations. He was a University man, and hoped we would get our place in the Universities side by side with the Medical Profession. The matter was considered from a University standpoint; it could not recognise the right to teach being in Professor Williams' hands. Suppose, as the remark was made, that Professor Williams fell out and left us with the materials on hand, we should be stranded, and have no licence to teach. Here is what I think the profession is not quite conscious as to the history how we proposed that the teaching should come into this University. It was proposed that Professor Williams should be a teacher in the Institute of Comparative Pathology, which Institute is recognised by the University. Well, as you know, a serious misconstruction and very great spleen has been expressed upon that method. I appreciate much that has been said in that there was no constituted authority when Professor Williams came here. There was no government, and there was to

be no Charter. Those who have advised the movers in this matter suggested that, instead of Professor Williams coming here as a teacher in a Veterinary College to be affiliated with the University, that the University itself as a body should have and ask power to teach Veterinary Medicine and Surgery. I do not think that has been quite clearly put. Instead of practically coming in the first place in connection with an Institute in connection with the University, he comes, if we have the satisfaction of getting this licence to teach, directly as a University asset. I do not think that has been properly explained before. I do not think there has been any explanation of it, and I have very much regretted that there has not been. There is another aspect of the question which has been called into being this afternoon—as to the rights of a private practitioner. We do not anticipate, and it would not be recognised, that this clinic of ours should be a money-making clinic, that it should be a free practice clinic. With this University standing the Professor will not be allowed to practice as an ordinary veterinary surgeon. I appeal to all of you—all and any of you, and in this I have acted for you all—are we to be dogs in the manger, to say that Professor Williams shall not practise here? He will not practice by virtue of his connection with the University. There shall be no cheap practice here. Who is to do the practice? Are we, the veterinary surgeons of Liverpool, to stand back on the threshold of what we have wanted—we have all said we wanted it—simply for party split and party spirit? My name has been mentioned in connection with the clinic. When the time has come, as we sincerely hope it will come—those appointments to teach clinical veterinary medicine and surgery will be governed by yourselves.—(Hear, hear.) The appointments for the right to teach you at the Hospital will be made on the recommendation of the professional committee of the Hospital. The appointments will be no more in Professor Williams' hands than the appointments in the Royal Infirmary opposite are in the hands of any one individual. I must apologise, gentlemen, for detaining you.

Mr. GARNETT.—If I am to speak again I must thank Mr. Sumner for his very luminous speech. I am sure, if the profession had heard what he has said, it would not have been kept in the dark as it has been done.

Mr. SUMNER.—I quite agree with you.

Mr. GARNETT.—There has been one great thing to thank him for. He seems to have been the only one to illuminate the profession as a whole as to who is to govern this School.

Mr. SUMNER.—The School will be governed on the same lines as the Medical School.

Mr. GARNETT.—By a Veterinary Board. How is that to be elected?

Mr. SUMNER.—How is that to be elected? We will give you an idea.

Mr. GARNETT.—Thank you.

Mr. SUMNER.—This Hospital question to me has been a serious one. The question of giving clinical training to our men has been a most serious one; if we cannot give them scientific training equalling and surpassing most, we will be face to face with a serious difficulty. Our Professor must not practise. Generally speaking, no practitioner wants cheap practice. You know we view with suspicion gentlemen who have offered to find clinical instruction for students for such a scheme. Well, now, as to the Hospital. The University will no more consider our Hospital than the University considers the Royal Infirmary. Our Hospital will

have to be kept and governed and supported altogether outside the walls of this University. We are dealing with suppositions. This is our scheme if this goes through :—The Board of the Hospital will be responsible for the building and the maintenance and the conduct of the Hospital. Here again we look about for representative men. We look to the Chairman of the Health Committee of our own City Corporation, the Chairman of the "Animal" section of the Chamber of Commerce, the Chairman of the Cart Owners' Association, the Chairman of the Cowkeepers' Association, the Chairman of the Foreign Cattle Trade Association, the Chairman of the Butchers' Association, Mr. Charles W. Jones, Mr. Swarbrick, and Mr. Bruce, two representatives of the Veterinary Medical Board, and one representative of the University Council. These men, by the fact of their position, are interested in animal welfare. It will be to those men that we shall make our application to act in any particular line. The professional matters will be absolutely conducted by the Professional or the Veterinary Medical Board. Most of you will be on that Board. You will be invited to be on that Board. Then, as to the regulation of the Hospital and the appointment of clinical teachers. The promotion of strictly Veterinary matters will be left entirely in the hands of the committee to advise the responsible control and administration. If there is anything further you would desire to know, I shall be glad to answer you.

Mr. GARNETT.—I thank you, Mr. Sumner. I wish this had been made public to the profession some time ago.

Mr. HUGHES (Oswestry).—If that information had been given to our "Recorder," I am sure there would have been an expression of a sincere wish to advance the proposal in the interest of the Veterinary Profession.

Mr. WOLSTENHOLME (Manchester).—I feel almost indignant that I should have to come here this afternoon to announce my adherence to this scheme. I thought it had gone past altogether. I am delighted that the Veterinary Profession are at last coming in close contact with the great teaching centres of our country.—(Hear, hear.) In my opinion, nothing but good can accrue from it. I am only sorry it did not come sooner.—(Applause.) Then, as to the part which the proprietary schools have played in this country, I am sure there is not one of us who is not grateful for what they have done. We could mention names at those schools—tender-hearted, self-denying men—who have in a sense beggared themselves to enrich our profession. But that is a thing of the past. We must come into line. It is only what happened in Manchester a few years ago with regard to our Medical Schools. I remember our School of Anatomy. It was a proprietary school. The fellows went across to the Infirmary to get their clinical work. That proprietary school merged itself into the Owen College, part of the great Victoria University, and the teaching of the clinical work still goes on in the Infirmary, as it did before. There seems to me to be no difficulty in the matter. I hope I am endowed with some Lancashire common sense. Instead of trying to see the thing, it seems to me people have tried not to see the thing.

Professor WILLIAMS.—Hear, hear.

Mr. WOLSTENHOLME.—I am exceedingly delighted, and the sooner it comes the better. I compliment Professor Williams for his courage in being able to break off from the connections and associations of Edinburgh to come into this great centre. I am only sorry that this close alliance of the Veterinary Profession with the University did not occur in Manchester.

Mr. FAULKNER (Manchester).—It has been quite recently stated that if the explanations given by Mr. Sumner had been put before us as members of the Veterinary Profession earlier a great deal of anxiety and debating might have been saved. Well, I should look at the matter perhaps in another light. Perhaps a more generous spirit could have been displayed, and credit for good intentions given to Professor Boyce, Principal Williams, Mr. Sumner, Mr. Stafford Jackson, and Mr Eaton Jones, all of whom, to my mind, have had only one object in view—the progress of Veterinary Science in this country, and the putting it on a more legitimate basis than it has been in the past. It has been said, and quite truly, by Professor Boyce, in making a comparison of the status and progress of our profession in this country, that we are far behind the Continent. He has given the reasons. We have had to work for all we have got. We have never had anything given to us. We are not State-aided. We have not been able to get endowments. We have had very little help indeed, and the wonder to me is that the progress made in our profession in recent years is such as it is. I believe further, that we have to thank the proprietary schools to a very great extent for that.—(Hear, hear.) Those of us who are cognisant of the history of our profession, if they will carry their minds back—I cannot to the full length of time; perhaps if I could I should have some little more experience—will remember the days when the Dick College was established in Edinburgh, and we had the one teaching school in Camden Town. The proprietary school was established in those days by Professor Dick. Some of the most eminent men in our profession have graduated through that College. I do appeal to the members of our profession not to look at the question from a narrow point of view. Do not think for a single moment that the movers are going to gather *kudos*, and are considering their own self-interest. I give them credit for a higher spirit. Gentlemen, to-day education is not going to be blocked. The spirit of the age is free trade and education; no monopoly, no protection.—(Hear, hear.) When we look back upon the history of the old Universities and the establishment of the younger Universities, it brings to my mind somewhat the discussion we are having with regard to this question and the competition there was between Manchester and Liverpool in making the Ship Canal. Liverpool did not stop it; and I do not think education is going to be stopped. If we can establish two Universities in one county alone, such as Yorkshire, what does it indicate? Education is not going to be stopped, and why should Veterinary Education be left out? We want it in, gentlemen; we have been too long shut out. We have had no opportunity beyond our own strenuous individual exertions to obtain any position. I believe that the movers in this matter are moving in the right direction. There should not be—and I feel certain from the explanation that Mr. Sumner has given—anything done to prejudice in any way the interests of the local practitioners.—(No.) Mr. Sumner is not a necessitous man, Mr. Jackson is not, Mr. Eaton Jones is not. I ask you, what have we to gain beyond professional good? It is not to themselves, but to the profession as a whole. I appeal to the members of the profession to look at this question from the point of view of past education—the good that it is calculated to do to Veterinary science, and not the interest of individuals or teaching schools. I think this matter ought to be brought before the whole of the profession. The circular says we are to consider the question from every point of view, and that the opinion of the profession as a whole may be

taken upon the advisability of University training for Veterinary students. There was no scheme in this world ever put forth that was perfect at the start. These meetings evidently do good. To-day's meeting will have been beneficial; but I do think that, when the scheme has assumed something like a definite form, and a form in which it is likely to be more perfected in regard to its work, that the profession as a whole ought to be consulted. My view is that this scheme should go before the whole of the members of our profession, and that they should be asked to answer yes or no. The pulse of the profession should be felt. There was the vote of the Council of the Royal College of Veterinary Surgeons the other day on the question of the transference of the School to Liverpool. Sixteen members of the Council voted against, three for, and three did not vote. That is twenty-two. Nine members were absent. I think a bare majority of one, as voiced by the Council of the Royal College of Veterinary Surgeons, cannot be said to be absolutely representing the views of the Veterinary Profession on this question.—(Hear, hear.) I think this matter ought to be dealt with by testing the feeling of the whole of the members of the profession.

Mr. TAYLOR (Manchester).—I do not know that any remarks I can make would be of value to this meeting, inasmuch as the statement by my friend Mr. Sumner has satisfied me on a point on which I felt somewhat warmly, and that was from the individual view of the private practitioner resident in Liverpool and district. So long as the clinical tuition of the College does not interfere with the private rights of the ordinary practitioner, then that matter, so far as my mind is concerned, disappears. But I must state my feelings—Professor Boyce will excuse me—with regard to the manner in which the scheme—it is a word which seems to stick in the throats of Members of the Council—has been laid before the Council of the Royal College of Veterinary Surgeons. At the same time I am prepared to admit that the scheme as suggested was not met in a spirit that it ought to have been met.—(Hear, hear.) It was met in a spirit which had, it seemed to me, a dislike to the innovation, for such an institution as the Liverpool University to take by the right hand the education of Veterinary students. But, Gentlemen, as Mr. Faulkner remarked, no one has a right to a monopoly in teaching, as in other matters, in this world. So long as the teaching institutions in connection with the Liverpool University does not interfere with the one portal system of entrance into our profession, I do not see that any one can have any objection to a teaching school being established in connection with this University. I for one certainly hail with delight the right hand of fellowship and of benefit which has been extended to us by the authorities of the University of Liverpool.—(Hear, hear.)

Mr. PACKMAN (Bury).—I have not formed an opinion upon the subject except from what I have heard from the various speakers. I am very pleased to hear what Mr. Sumner has said. It has been a rather difficult subject to understand, and he has thrown some light upon it. I wish personally that that had been done before. I think this cloud will be removed. Probably a little jealousy would have been removed if this thing had been put openly and clearly, and so that it would have been fairly understood. The Council would then have been able to take the matter up probably in a different light than they did on the last occasion on which they met. I hope that Professor Williams will find that that is the case at a future meeting of the Council. I sincerely hope so, and that

this matter will go on. I think Professor Williams can be trusted.—(Applause.) No one has been a greater champion for our profession than Professor Williams, and the profession is deeply indebted to him. His connection with this University will be a great advantage to our profession. I personally hope the matter will go on and prosper, and I heartily wish all connected with it every success.

Professor WILLIAMS.—Perhaps Professor Boyce will allow me to make a remark. There seems to be an impression abroad that I have endeavoured to conceal matters from the profession. When the Veterinary College was proposed to be removed from Edinburgh to Liverpool there was no thought for the moment of affiliation with the University. That had to be a process of evolution, and we hoped in time it would be an affiliated school to the University. I never for a moment expected that any other school or any other body of men would oppose the removal of the centre—not a centre that was receiving money from the Government or from the members of the profession. I never for a moment expected there was going to be any opposition or adverse criticism to it. Had I known there was going to be criticism to it I could and would have prepared an elaborate answer to it. It was before the Council that all the opposition arose.

The CHAIRMAN.—I think, gentlemen, Principal Williams has explained the unexpected difficulties which were encountered when he approached the Royal College. He expected no adverse criticism to this scheme, and for my part, as an outsider simply concerned with the organisation of the laboratory teaching, took it for granted that things would go through. I think it is a very good thing that we have had the benefit of expressions of opinion. There is no question about it. Mr. Faulkner, Mr. Hughes, Mr. Taylor, and Mr. Packman, coming from a distance, have, I think, greatly elucidated the matter, as also have the other gentlemen who have spoken this afternoon. I presume it is not your wish that these proceedings should not be reported? It is for you to say.

Mr. HUGHES (Oswestry).—A report of the proceedings is being taken. I am sure that if you could enlighten the profession generally in the manner Mr. Sumner has done in our case this afternoon, it would remove an immense difficulty. I have spoken to a great many of my colleagues in my part of the country. It is the feeling among them; there is the difficulty which Mr. Summer has now removed.

Mr. GARNETT.—Speaking for ourselves as individuals, we have no right to term ourselves the profession. I must say personally it should not be reported. This scheme which has been explained by Mr Sumner is good so far as it goes. I cannot agree with Mr. Faulkner—I think it was Mr. Faulkner—as regards the vote at the Royal College of Veterinary Surgeons, because I do not think this scheme was ever put before them in any intelligible way. I think we should, in the interest of the profession, take the same stand as they do. People do not like voting in the dark. The members have expressed themselves with their thanks to Mr. Sumner for their first breath of life with regard to this scheme. Now it is all cleared up. I feel there can be only one voice. It has only been this unfortunate way in which it has been put before the profession.

Mr. FAULKNER.—Mr. Garnett says he cannot believe what I stated as to the voting in the Council. I think he said that it was practically the only course the Council could take under the circumstances. Is that so, Mr. Garnett?

Mr. GARNETT.—Yes.

(*Page* 29.)

Mr. FAULKNER.—Well, with that I beg to differ. I think a much more judicial procedure, and a much fairer procedure, would have been to divide into two that resolution which they passed. In the first place, I hold it is entirely inconsistent and illogical. It says: We welcome any arrangements by which the number of teaching schools in Edinburgh will be decreased, but for the same reason we object to the establishment of teaching schools in England. Now, if that is consistent and logical, I have no idea of one or the other. How can they welcome any scheme or arrangement for the discontinuance of a teaching school in Edinburgh, and then immediately proceed to say that they object to the establishment of teaching schools in England? It is inconsistent. If they had passed a resolution in this form—That they welcome, under existing conditions, the termination or the ceasing of one of the teaching schools in Edinburgh, that would be right; but with regard to the opening of a new teaching school, or the transference to Liverpool, if they desired and required further information, they could have got it.—(Hear, hear.)

After a few further remarks, the meeting terminated with the usual vote of thanks.

Original Papers.

UMBILICAL HERNIA—ABDOMINAL SECTION—RECOVERY.

BY CAPTAIN H. A. SULLIVAN, PRINCIPAL ARMY VETERINARY SCHOOL, POONA.

APPENDED is a photograph of a three-months' filly suffering from umbilical hernia, which was operated upon in this institution and made a good recovery. The hernia, which was about the size of a small apple, could be easily reduced, and the opening in the abdominal fascia, which was about four inches in length, distinctly felt.

The operation was performed on the 13th inst., the patient having been fasted for twenty-four hours previously. The part having been carefully shaved and the instruments sterilised, an incision about four inches long was made cautiously through the skin and the intestines carefully pressed down by the operator's left hand, which had been previously held in a 5 per cent. solution of carbolic acid for five minutes. A Gerlach's needle armed with chinosol tape was used to draw the edges of the abdominal fascia together, the free ends being subsequently tied round a pencil on either side in the form a quill suture. The sutures of chinosol tape were used to draw the edge of the abdominal fascia together and four satures of rhea fibre for the superficial skin wound.

The interest of the case, however, to my mind, centres not so much on the fact that abdominal section in the horse is possible, if not always advisable, as to an unpreventible incident which occurred during the operation.

After the first deep suture had been passed through the abdominal fascia the breathing appeared somewhat shallow, and I ordered the removal of the chloroform muzzle. As a result probably of the fresh air, whilst I was passing the second suture through from one side to the other, the filly gave a great struggle. So far as I was aware, the intestines were always below my left hand, which was in the abdominal cavity, and it was not until I had drawn the tape right through that I was aware that I had

included a loop of the small intestine in my suture. Directly I discovered my mistake I cut the suture on either side and withdrew the tape. Here, then, was a distinct perforation in two places of the small intestine.

Nothing was to be done by lamenting over spilt milk, and I continued the operation as though nothing had happened, only mentally resolving that the patient should have nothing but milk and eggs until I saw how things were going.

The operation was performed on the 13th April, and the temperature on the morning of the 14th was 102° F., and in the evening 104° F. Knowing what I did, I was not surprised, and expected a further rise, but contrary to my expectations it went down and kept down until the 22nd, when there was a sudden unaccountable rise of the temperature to 103·8°, which, however, quickly went down and did not rise again.

The quill sutures were removed on the 26th, and the filly discharged cured on May 2nd.

I attribute this recovery after perforation of the intestine to two things:—

(*a*) The perfect asepsis observed.
(*b*) The giving of nothing but milk and eggs for twelve days after the operation.
(*c*) The empty state of the bowels at the time of operation.

A PRELIMINARY NOTE ON THE OCCURRENCE OF *PIROPLASMA BOVIS* IN ENGLAND.

BY R. E. MONTGOMERY, M.R.C.V.S., VETERINARY RESEARCH LABORATORIES, JOHNSTON LABORATORY, UNIVERSITY OF LIVERPOOL.

WHILST engaged in the West of England during the summer of 1902, I had occasion to come in contact with a considerable number of cases of the disease in cattle popularly known as "redwater"; and owing to the apparent similarity of this condition with those affections designated in different localities as Texas Fever, Australian Tick Fever, &c., I endeavoured to show in a paper subsequently read before the Edinburgh Veterinary Medical Association, that the etiological factor was identical in all cases; that the *Piroplasma bovis*, or *Pyrosoma bigeminum*, by which it was formerly known, is the specific cause of the "redwater" of our own country, as well as in that of nearly all other countries in Europe, and on the Continents of Asia, Africa, America, and Australia. Without reverting to the cases observed in that year, which formed the subject of a short note in the *Veterinary Record* of September 1902, I may here state that the description of the piroplasma given below is based upon the observation made on seventeen cases in the counties of Devon and Cornwall, fifteen of which were typical cases of "redwater." One was from an animal that had been dead six and a half hours after having been clinically affected, and one from a two-year-old bullock, showing all symptoms of the disease, with the one exception that the urine was of normal colour throughout.

Semiology.—The symptoms of this disease are so well known to practitioners, that a mere outline will suffice in a note of this description. Speaking generally, it may be said that the only symptom looked for by the

veterinarian and agriculturalist is hæmoglobinuria, and once this is observed, the usual treatment for "redwater" is adopted. The animal, which is as a rule above twelve months old, is seen to be listless, head and ears depressed, eyes dull, glassy, and frequently sunken, coat staring and harsh, back arched, muzzle dry and parched, appetite diminished or absent. In the early stages there is generally diarrhœa, the fæces being dark, fœtid, and voided in small quantity; later none are passed, they being collected in an over-distended rectum. There may be, and frequently is, a grinding of the teeth and grunting on movement, which at the same time produces a tumultuous beating of the heart, the sound being, in a very anæmic animal, clearly detectable at several yards. The pulse is peculiar, of a marked dichrotic, jerky nature, ranging from 80 to 120 per minute.

Visible mucous membranes, pale at all stages of the attack, becoming after a few days blanched to a degree. This is especially well seen in the vulva, the lips of which are at the same time drawn and puckered.

The temperature varies to a considerable extent. In the early stages of an attack, and especially if an animal be observed previous to the symptom of hæmoglobinuria becoming manifest, a temperature of 106° to 107° F. is not infrequent; later it falls, till towards the termination of a protracted case, even when on the way to recovery, a temperature of 97° to 99° F. is by no means rare.

The urine, from what for the sake of convenience may be termed a *typical* case of "redwater," presents several phases. Commencing as highly coloured, or slightly discoloured, it passes through a range of reds, brown to black. Energetic treatment, and especially the administration of either liq. Ferri perchlor. or ol. terebinthinæ, generally effects a "clearing up" in a short time, before any of the deep-coloured stages are reached; but a neglected case may continue discharging a urine resembling coffee grounds for several days, and instances are not infrequent where "blackwater" appears simultaneously with the first constitutional symptoms, none of the lighter tints being observed. This pigmented urine in falling to the ground produces a marked froth, which can be seen several hours after being voided.

The analysis of the urine I shall not touch upon in this paper, beyond remarking that spectroscopic examination shows the characteristic bands of methæmoglobin, the pigment responsible for the discoloration.

In the case of milking cattle the milk is in severe cases somewhat coloured, and a pink deposit may be observed on allowing it to stand or centrifugalising.

If the above be a picture of a typical case, of "redwater," it may be asked, "what is an atypical case?"

I am confident that all practitioners in districts subject to this disease frequently come in contact with cases presenting all appearances of "redwater," with the absence of that one symptom, hæmoglobinuria. The history of the case is similar, the aspect of the patient is identical, the only difference being that, owing to the fact that there is not the same loss of blood pigment nor the same degree of anæmia, the temperature remains above normal, generally—105°-106° F.

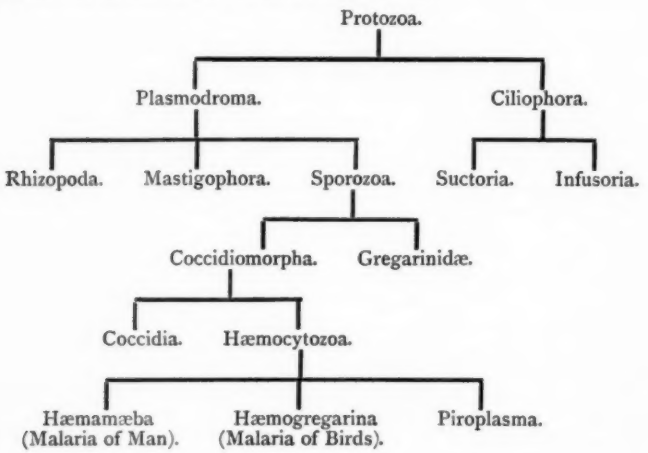
It is a well recognised circumstance that in all other forms of bovine piroplasmosis (Texas fever, &c.) hæmoglobinuria is by no means a constant symptom—why should it be in England?

As an illustration of this type, I quote here a case that came under the

care of Mr. E. J. Thorburn, M.R.C.V.S., Okehampton. The patient was a two-year-old bullock, the property of a farmer occupying land well known to be addicted to "redwater." On examination the animal presented all the symptoms of this disease, minus that of discoloured urine—loss of appetite, stiffness, eyes dull and sunken, pulse 80 and of the characteristic nature—temperature 106·2° F.

I saw the animal on the following day, when he showed but slight change—temperature 107°, pulse 102. On examining a fresh preparation of the blood taken from the ear, numerous refractile bodies could be seen within the erythrocytes. Films stained in the usual manner showed 5·7 per cent. of corpuscles invaded by the piroplasma, both pear-shaped bodies and the round form being present. On the next day the temperature was 105·5°, pulse 98, the animal feeding a little and looking somewhat brighter. The following morning found him considerably better—temperature 103·6° F., pulse 64, eyes more natural, muzzle moist, and feeding fairly well with the rest of the herd—he having been turned out on the second day of our visits. In this case, then, the parasite was present in the blood in large numbers (5·7 per cent. of erythrocytes on the second day), yet no discoloration of the urine was to be observed, although the animal micturated in our presence on each occasion.

The Parasite.—The position of the *Piroplasma bovis* in the zoological kingdom will be seen from the following scheme:—



This micro-parasite has been observed in cattle almost throughout the world, producing in them symptoms varying with its virulence and possibly too with the susceptibility of the host.

Observed first in Roumania by Babes in 1888, it is now recognised as the specific cause of "redwater" in all countries, though in spite of this no mention is to be found of it in English veterinary literature, a fact that is deeply to be regretted, seeing the importance this disease occupies to the veterinarian and agriculturist in many parts of the United Kingdom.

In this note I do not intend to deal with the exact pathology of "redwater."

I hope, however, to issue in due course a further report upon the experiments now being conducted; confining myself here to the description of the piroplasma as observed in those cases with which I have come in contact this year during short visits to known infected areas.

In the seventeen cases of bovine piroplasmosis examined the parasites present respond in all particulars to those described by Babes, Smith, and Kilbourne, Lignières, &c.

In fresh prepartions of blood taken from a peripheral vessel many of the red blood corpuscles are seen to contain bright refractile bodies, which on careful watching, and especially when examined on a warm stage, are seen to alter their position within the cell—that is, they possess amœboid movement. Two principal forms can be readily detected (see diagram).

(1.)—*The pyroform or pear-shaped* bodies were present in all living cases. The corpuscle in many cases rather larger than normal, paler in colour, and shows either one or two elongated club-shaped bodies—most commonly two—each of which measures about $\frac{1}{4}$ to $\frac{3}{4}$ the diameter of the cell in length and $\frac{1}{12}$ to $\frac{1}{8}$ in breadth at its widest part.

This body is highly refractile, and in some instances presents on focussing a minute dark, though more highly refractile spot at the clubbed extremity. These two pyroform bodies approximate each other towards their tapering ends, forming with each other an angle varying greatly, being sometimes so great as to appear almost as a straight line.

(2.)—*The round or ring forms* were also present in all living cases as well as in the dead one.

Situated generally towards the outer third of the corpuscle, they appear as small highly refractile granules, varying in size from $\frac{1}{10}$ to $\frac{1}{5}$ of the cell diameter. It is these bodies in particular that are endowed with amœboid activity, for they can readily be observed to wander across and around the corpuscle. Some of the larger of these forms show either partial division or a brighter spot situated towards one side of the body.

Free bodies may also be observed in the plasma, but in these unstained preparations it is impossible to distinguish between the parasites, platelets, and hæmoconia.

Films were made from all the above cases, and stained by Romanowsky's method and Nicolle's carbol thionin—the former stain, or Nocard's modification of Laveran's method, being of special value in studying the intimate structure of the organisms. Stained by any of these methods the same forms can be seen.

The *pear-shaped bodies* (Fig. *a*) are seen occupying a considerable area of the corpuscle, in some cases as many as four pyroform and one round variety being present in the single cell (Fig. *d*). In size they measure from 1 to 3·5 μ in length, and from ·3 to ·1 μ in width at their blunted end. At this extremity a small chromatic spot, stained red by Romanowsky's method, is seen occasionally; however, this is situated towards the middle third of the parasite, its position possibly depending upon amœboid movement prior to fixing. *Round forms* are frequently solitary, within the erythrocyte, though two, three, four, five, and even more are occasionally present. These can conveniently be divided into two varieties.

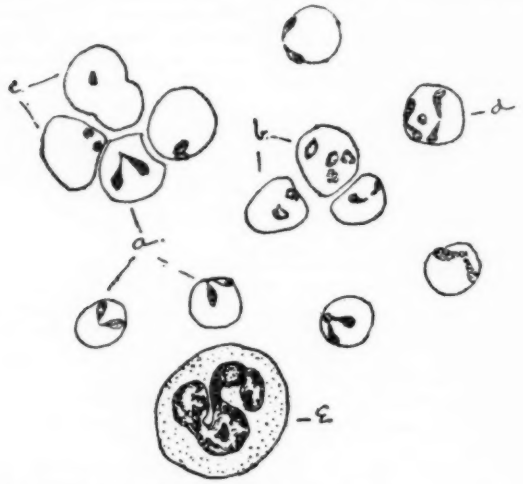
(1) The Signet variety (Fig. *b*), resembling somewhat a stage of the malarial parasite of man. These are from ·6 to 1·5 μ in diameter, and in structure consist of a well-defined periphery surrounding a clear hyaline

area. The peripheral mass shows either one or more small spots of chromatin.

(2) The Coccus variety (Fig. *c*) appears as a structureless mass about ·75 μ in diameter, stained homogeneously with Romanowsky, and situated generally towards the middle third of the corpuscle.

Free Bodies.—In fixed preparations both the pear and round forms are to be seen lying free between the corpuscles. Some of them have no doubt been liberated during the making of the film. No points of difference have been observed in the structure of the intra-and extra-corpuscular organisms.

It will be seen from these notes that the English parasite is practically identical with that described by writers throughout the world, further study being needed to determine whether any structural variations do occur.



(*a.*) Typical pyroform bodies, paired within a corpuscle.
(*b.*) The Ring or Signet variety.
(*c.*) The Round or Coccus-like variety.
(*d.*) An Erythrocyte containing four pyroform and one Signet parasite.
(*e.*) A Leucocyte inserted as an indication of size.

Drawn from the cases mentioned—Lietz, Oil Imm., objective $\frac{1}{12}$. Swift Compensating Ocular 18.

The Transmission of the Parasite.—In no form of bovine piroplasmosis does natural infection of animals appear to occur without the agency of one of the family ixodoidea or ticks. Each country has its own specific tick to play the part of intermediary host; in America the *Boophilus annulatus* or *bovis;* in Australia the *Rhipicephalus australis;* in Rhodesia probably the *Rhipicephalus decoloratus;* and in this country *Ixodes ricinus* or *reduvius* play a similar *rôle.* This ixode, a minute description of which can be found in Neumann's "*Revision de la Famille des Ixodides,*" and in a paper by Salmon and Stiles on "The Cattle Ticks

of the United States," published in the 17th Annual Report of the Bureau of Animal Industry, Washington, 1900, is very prevalent in the West of England.

Hardly an animal can be examined which does not bear upon the inside of the thigh or axilla this tick in various stages of development, or the small nodules resulting from the puncture of the female ixode.

I append a brief *résumé* of the cases examined during this year showing the age and sex of the patient, the time after the first appearance of the symptoms at which it was examined, the condition of the urine, the relative number of piroplasma in the blood, the presence of the *Ixodes ricinus* and the result of the cases under consideration.

Unfortunately the result is in many cases unknown to me, as, owing to my very short and hurried visits to the infected area I have been unable to follow up these cases as thoroughly as might have been desired.

As will be seen, cases 1, 2, and 15 were examined after the urine had cleared, and the animal had ceased to present any clinical symptoms. These were examined with a view to determining whether the parasites could reasonably be suspected of having been present during the attack, and further, the length of time after recovery during which the blood may be considered virulent. Case 13 showed at the last examination every indication of making a complete recovery. Case 12 still shows the after effects of "redwater," although the urine had regained its normal colour.

Experiments are now in progress with a view of determining the connection between this *Ixodes ricinus* and the *Piroplasma bovis* of England, as well as between this micro-organism and the disease known as "redwater"; and it must be left to a further report to enter more fully into the discussion of the etiology of this condition, the sole object of this note being to call attention to the fact that *Piroplasma bovis* is present in this country.

Case.	Age.	Sex.	Number of Days after appearance of symptoms before Examination.	Urine.	Piroplasma.	Ixodes Ricinus.	Result.
1.	18 mo.	M	2	Cleared.	Scanty.	Present.	Recovered.
2.	3 yrs.	F	5	Cleared.	Scanty.	,,	,,
3.	6 yrs.	F	1	H'buria.	Very plentiful.	,,	Death.
4.	17 mo.	M	2	,,	Fairly numerous.	,,	Recovered.
5.	15 mo.	M	2	,,	Present.	,,	Unknown.
6.	3 yrs.	F	4	Cleared.	Few.	Nodules.	,,
7.	18 mo.	F	3	H'buria.	Scanty.	Present.	,,
8.	4 yrs.	F	4	,,	Plentiful.	,,	Death same night.
9.	8 mo.	M	1	Cleared.	,,	,,	Unknown.
10.	18 mo.	M	1	Deep.	,,	,,	,,
11.	14 mo.	M	Been dead	6½ hrs.	,,	,,	—
12.	2½ yrs.	M	2	Cleared.	Numerous.	,,	Recovered.
13.	2 yrs.	M	No H'buria ev	er manifest.	5·7 per cent.	,,	,,
14.	2½ yrs.	M	2	Clearing.	Present.	,,	Unknown.
15.	2 yrs.	M	4	Cleared.	,,	,,	Recovered.
16.	18 mo.	F	3	H'buria.	Numerous.	,,	Unknown.
17.	15 mo.	M	1	,,	,,	,,	,,

FRACTURE OF THE BASE OF THE SKULL.

BY LIEUT. E. P. ARGYLE, A.V.D., LONGMORE CAMP, ALDERSHOT.

THE subject, a mounted infantry cob mare, five years old, had always been very nervous, and greatly resented having her head touched.

On May 7th a man was putting the bridle on her in the stable, when she suddenly reared up straight, her hind legs slipped, and she fell backwards, her poll coming in violent contact with the brick floor. She never moved, death being instantaneous.

I saw her a few minutes afterwards; blood was running from the mouth, nose, and ears, but there was no external wound or injury, not even a bruise, although carefully looked for.

On removing the skin from the poll and upper part of the neck, the underlying tissues were found to be greatly contused, with considerable hæmorrhage under the occipita allantoid ligament and into the spinal cord, but there was no fracture of the vertebra, and, except for the hæmorrhage, the cord was in a normal condition.

The base of the brain was crushed, and there was much hæmorrhage into the cavity, the right side bulging into the foramen sacrum, and the lateral ventricle full of blood.

The sphenoid was broken into fragments, and splinters had penetrated into the medulla and pons, causing instantaneous death.

The case seems somewhat remarkable, the fracture from counter shock taking place at some distance from the seat of the direct injury.

INTER-TUBERCULAR BURSITIS, WITH OSSIFICATION OF THE FLEXOR BRACHII BURSA.

BY CAPTAIN A. J. WILLIAMS, ARMY VETERINARY DEPARTMENT, NEEMUCH, CENTRAL INDIA.

INFLAMMATION of the bursa of the flexor brachii muscle, either acute or chronic, is occasionally met with, and I have read of the following conditions occurring, viz., cario-necrosis of the bursa, ossification of the flexor brachii, and exostoses on the bicipital groove, causing roughening of the gliding surface of the biceps, but I cannot find a record of a case in which the bursa is almost entirely replaced by bony growths, as it is in this one.

History, &c.—On the 18th October 1902 a six-year-old artillery wheeler, whilst being trained to draught, threw himself down and fell on the point of the near shoulder. Lameness severe, of the usual shoulder type. Fomentations and stimulating liniment used.

17*th December* 1902.—No improvement; blister applied.

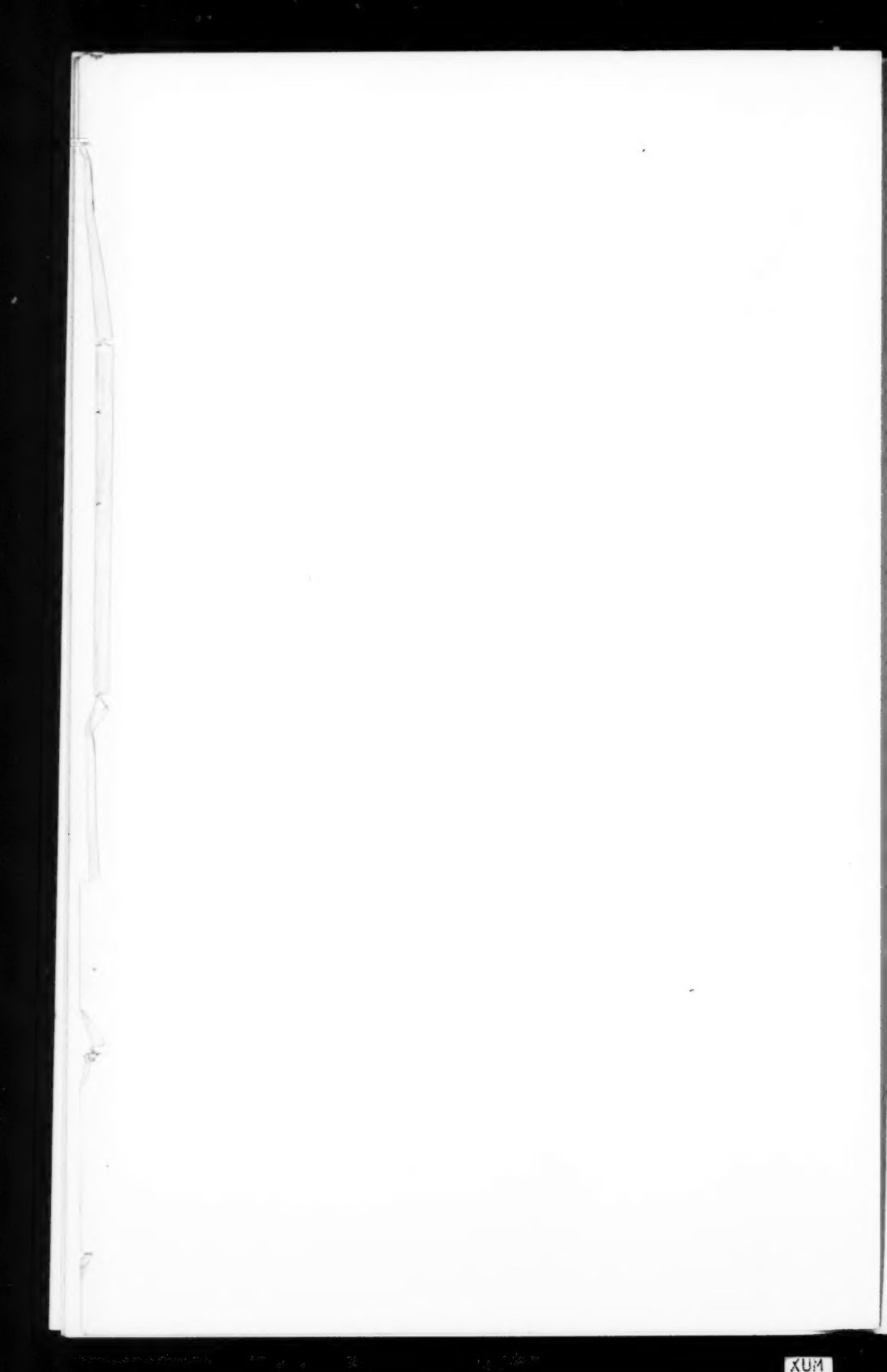
13*th January* 1903.—Improved sufficiently to march with the battery into camp, 150 miles.

27*th January* 1903.—Practically sound.

8*th February* 1903.—I first saw the case on this date, and noted the condition as follows, viz.:—Has had a very severe injury, probably ruptured the flexor brachii bursa; a bursal enlargement present immediately posterior to the flexor brachii; with marked atrophy of the infra spinatus. Case doing well; apply cold irrigations; massage, and paint enlargement with tr. iodine.

(No. 1. *Page* 37.)

(No. 2. *Page* 37.)



24th February 1903.—Bursal swelling remains, and since stiffens, but is going practically sound; sent to light duty.

11th June 1903.—Readmitted lame; inability to extend the leg and clear ground with the toe; treated with fomentations and stimulating liniment.

17th June 1903.—Practically sound; will probably never be able to extend the leg properly, but better at light duty than resting, as it seems more stiffness than lameness.

21st August 1903.—Readmitted very lame; the bursal swelling very large, and increased atrophy of the muscles.

30th August 1903.—A pitch plaster was applied over the enlargement, and by the 19th September 1903 the swelling was greatly reduced, but lameness showed no improvement.

23rd October 1903.—No improvement; stands with lame leg slightly advanced, and all joints flexed. On placing the fingers over the flexor brachii and getting the leg flexed and extended, a grating sensation is imparted, and I could feel a moveable body, which gave me the impression of a fracture of the external tuberosity.

29th October 1903.—As a last resource a seton was tried, inserted under cocaine, the tape smeared with ung. hyd. biniodide, c. cantharides 1-8.

22nd February 1904.—No improvement; destroyed; incurably lame.

Post-mortem appearances.—Extensive atrophy of the following muscles, viz., supra spinatus, infra spinatus, teres minor, deltoid, and flexor brachii. Increased synovia in the scapulo-humeral articulation, brownish in colour. Articular cartilage covering the bicipital grooves showed erosions and inflammatory adhesions. The tendinous portion of the flexor brachii showed inflammatory adhesions. The greater portion of the bursa inter tuberculosis is replaced by wing-shaped bony growths, forming a groove through which the tendon of the muscle played.

Remarks *re* Photographs.

No. 1, *Posterior View.*—This shows very well the extent of new bony growth.

A. Tendon of flexor brachii.
B. Bursal membrane lining under face of the tendon.
C. and D. Isolated portions of new bony growth.
E. Wing-shaped new bony growth, extending right around to D on the other side.
F. A cut into the new growth; it shows calcification in progress.

The only healthy portion of the bursa is the lighter coloured part between the shaded portion of the tendon and the shaded portion of bony growth, E, and it extends in a narrow strip to C.

No. 2, *Anterior View.*—

A. Tendon of flexor brachii in the groove formed by the bony growths B and C.
D. The small piece of new growth marked C in photograph No. 1.

Translations and Extracts.

THE DEGREE OF RESISTANCE TO PRESSURE OF THE WALLS OF THE HORSE'S STOMACH.

BY M.M. DOSSONVILLE AND BROCQ ROUSSEU.

THESE experiments were made in support of the theories advanced as to the way in which the stomach is ruptured, and as a criticism on the recognised methods of treatment for indigestion in the horse.

1. Pressure exerted on the contents of the stomach in which micro-organisms grow, as is well known, will temporarily arrest fermentation, and this process is stopped long before a sufficient degree is reached to cause rupture.

2. If, as may be supposed, the walls of the stomach are able to resist a considerable degree of pressure (*i.e.*, several atmospheres), it is not unreasonable to look on those agents that cause the walls to contract as considerable factors in causing rupture. Not being able to discover anything recording the degree of resistance of the walls of the stomach we have made the following experiments.

In order to have them in as natural a condition as possible the subjects have been made use of immediately after death, some having been previously emptied, others containing a known quantity of food or water.

A known quantity of air or water was injected by the cardiac orifice, and the pressure registered by a mercury manometer. The variations in the dimensions of the stomach were noted at different stages, either by measurement made along the large curvature and round the circumference, or by photographs to scale.

The following technique was used:—The stomach was suspended by the œsophagus, and a glass tube with an indiarubber one outside passed through it into the stomach, through which a known quantity of air or water was injected. The pyloric opening was plugged with an indiarubber cork, through which a glass tube was passed, connected with the manometer.

EXPERIMENTS NO. I.

Air was injected into four empty stomachs, which expanded at each stroke of the pump, but no alteration in the internal pressure was shown by the manometer, and it was only after a large quantity had been injected that any movement took place, and then the column of mercury never rose over 5 centimetres. Rupture took place in No. 1 with 26·240 litres of air, No. 2 with 30·160, No. 3 with 32·32, and No. 4 with 40·50. The seat of the rupture was in every case in the same portion in which it takes place during life, viz., along the greater curvature between the pylorus and the large vessels on the exterior.

The successive changes in size were photographed, and are shown in Fig. 1.

NO. II.

Air was injected into a stomach containing 3 kilogrammes 900 litres of food, with the same results as in No. 1. Rupture took place with 31·7 litres, and the mercury did not rise over 5 centimetres.

NO. III.

Two empty stomachs were used. They, it must be remarked, were very

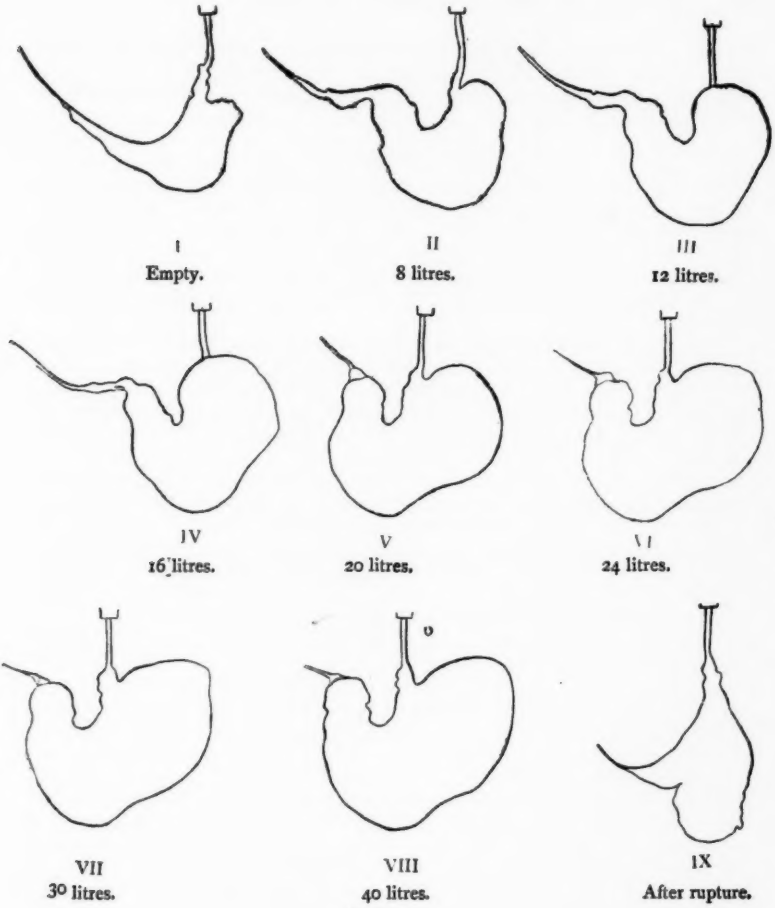


FIG. 1.

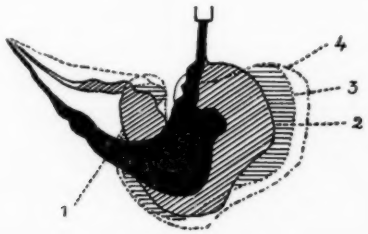


FIG. 2.

1. Empty stomach.
2. Stomach containing 16 litres.
3. Stomach containing 24 litres.
4. Stomach containing 40 litres.

small. The tube in the cardia was connected with a water-tap, which was allowed to run gently till the organ ruptured, in one case with 10·850, and the other with 17 litres of water. The pressure and seat of rupture were the same as Nos. 1 and 2.

DEDUCTIONS.

I. What is striking is the great extensibility of the stomach, and its small power of resistance, and want of elasticity. Instead of offering any resistance to the pressure of the air or gas, the tissues distended and remained in that condition, and when the gas attains a volume larger than that corresponding with the greatest length of the fibres rupture takes place, a pressure of 5 centimetres of the mercury, or $\frac{1}{15}$ of an atmosphere being sufficient.

The powers of resisting weight are even less; 10 litres of water acting on the greater curvature is sufficient to separate the muscular fibres from one another, but always in the same position. It can therefore be understood how the combined efforts of the pressure of a volume of gas and the weight of the contained solid and liquid contents of the stomach will easily rupture it, and by reason of the want of power of resistance a litre of air in it will occupy the same space as a litre of water. If, therefore, such a small quantity of solids or liquids as 10 to 17 litres is capable of causing a rupture by themselves, it can be easily understood that in an already extended organ the slightest fermentation or evolution of gas will cause a fatal result; and how dangerous a sudden shock, such as the patient violently throwing himself down, or any sudden contraction which may be caused by the administration of certain drugs is.

II.—The rupture always occurs at the same place in which it does during life.

This can be explained if the tracings in fig. 1 are placed over each other in rotation, so as to show the different stages of dilatation. This is shown in fig. 2 by the different shades up to 40 litres—the size between 16 and 24 litres being omitted. At the commencement of the injection the stomach swells uniformly, and after about a dozen litres have entered the right portion does not continue to enlarge, only the left pouch. The muscular fibres are very apparent, and the wall of this sac becomes so thin that the fibres separate, and rupture takes place. In many cases only the serous and mucous coats are implicated—the mucous, which is stronger, remaining intact, a condition of things often seen on post-mortem examination.

Dilatation is not uniform, the fibres of the left *cul de sac* being more extensible than the right, which first give way.

DEDUCTIONS.

From the above facts the following deductions can be made:—

1. Ten litres of fluid are sufficient to cause rupture, therefore a large quantity of fluid should not be taken at once, because if by any chance it remained in the stomach all the conditions necessary to cause a rupture would be present. Horses, therefore, should be let drink often, and in small quantities.
2. Any pressure above $\frac{1}{15}$ of an atmosphere acting on its muscles is sufficient to cause rupture, therefore it is necessary to avoid—

a. Violent shocks, such as falls, while the process of digestion is going on or during an attack of gastric indigestion.

b. The use of drugs, which cause the walls to contract, so that, added to the pressure from within, will make the total amount greater than the walls are able to withstand. It must be remembered that in practice there are factors present that render the stomach less capable of resistance than it is in a physiological experiment of this nature, such as the force exerted by the diaphragm and abdominal walls.

III.—In order to prevent rupture of a stomach distended nearly to its limits of resistance, and containing, in addition to gas, food and water, three plans suggest themselves:—

1. To open the pyloris.
2. To alter its position, as the lowest part, where the food naturally lodges, is the weakest, and the weight of this mass should be removed to a stronger part.
3. To puncture the left sac, where most of the gas accumulates.

These facts give rise to the following suggestions:—

a. As the powers of absorption by the stomach are almost *nil*, and as opium given by the mouth in a comparatively short time exerts its soporific effects on an animal suffering from colic, it would seem as if it had the effect of dilating the pylorus if closed.

b. It seems to be advisable to allow the animal to lie down and assume the dorsal position if he wishes it, and indeed to assist him by putting on hobbles and passing the rope over a hook or beam. It also appears that this is a better plan than walking about for a long time a patient whose stomach is liable to rupture at the most dependent part by the slightest violence, as by the dorsal position the organ is in the best position it can be in to prevent an accident.

c. The possibility of puncturing the left sac of the stomach should be considered. It has not yet been attempted, but does not seem impossible.

IV. As has been shown, the stomach will rupture when between 26 and 40 litres of air has been pumped into it which within has been at about the temperature of 15° Cent. The temperature of the stomach of the horse is nearer, however, 40°, so the quantity of air at 15° Cent. is much smaller than the figures we have given, as it is necessary to make a correction for the temperature. It will be seen that the quantity introduced from without into the stomach before a rupture takes place varies between $\frac{26 \text{ litres}}{1+0\cdot00366\times35}$ and $\frac{40 \text{ litres}}{1+0\cdot00366\times25}$ —that is to say 24 and 37 litres. Moreover, as a rupture can take place with a rise of the column of mercury in the manometer of 5 centimetres, we see that the highest limit is $24-(1000-\frac{760}{765}\times24) = 23$ litres 80, and

$37-(1000-\frac{760}{765}\times37) = 36$ litres 74. The capacity of the largest stomach we examined was at the maximum 36 litres, yet when this quantity was attained there was pressure and over-loading.

V.—From our knowledge of the process of fermentation we are aware that a very small quantity of material will give off a large quantity of gas.

A. Let it be supposed that a butyric fermentation of the sugar is taking place in the stomach. In separating from the glucose the action is the following:—

$$\underbrace{C^6\ H^{12}\ O^6}_{\text{glucose.}} = \underbrace{C^4\ H^8\ O^2}_{\text{butyric acid.}} + 2\ CO^2 + 2\ H^2.$$

The molecular weight of glucose is equal to—

$$C^6 = 12 \times 6 = 72$$
$$H^{12} = 1 \times 12 = 12$$
$$O^6 = 16 \times 6 = 96$$
$$\overline{C^6\ H^{12}\ O^6 = 180}$$

We also know that CO^2 with H^2 gives off 28·8 litres of gas at zero.

So $2\ CO^2 = 57{\cdot}6$ litres.

$2\ H^2 = 57{\cdot}6$ litres.

The fermentation, therefore, of 180 grammes of glucose gives $57{\cdot}6 + 57{\cdot}6 = 145$ litres of gas at zero.

If the temperature is allowed for as being near 40° Cent. the quantities of gas works out—$V^t = V^o\ (1 + a\ t)$.

$$V^t = 115\ (1 + 0{\cdot}00366 \times 40) = 131 \text{ litres.}$$

Therefore 180 grammes of glucose at 40° Cent. gives 131 litres of gas.

B. The question remains as to how much glucose is necessary to give 23 and 36 litres of gas experimentally, which is marked out by the following formulæ:—

$$\frac{180 \times 23}{131} = 31{\cdot}6 \text{ grammes.}$$

$$\frac{180 \times 36}{131} = 49{\cdot}46 \text{ grammes.}$$

So in the stomach during the time butyric fermentation is going on from 30 to 49 grammes of glucose is all that is necessary to form gas enough to rupture it.

Furthermore, 162 grammes of starch by hydrolosis forms 180 of glucose

So $\frac{162 \times 49}{180} = 44$ grammes of starch.

It may be seen that 44 grammes of starch turned into glucose and fermented will give off a sufficient quantity of gas to rupture a large stomach which is an almost infinitively small quantity when the amount of hydro-carbon consumed by the horse is taken into consideration, and, as readily can be understood when the stomach is overloaded, the addition of a very small quantity of gas is sufficient to rupture it.

CONCLUSION.

1. The stomach is extensible, but this varies in different parts, being least along the large curvature.

2. Its elasticity is slight, a pressure of $\frac{1}{15}$ of an atmosphere being enough to rupture it.

3. Rupture always takes place in the part that is least extensible.

4. This is assisted by any cause that increases the internal pressure, such as shock, ingestion of too large a quantity of food, or water, fermentation, and drugs that cause the walls to contract.

5. If it is practicable to puncture the left *cul de sac* of the stomach, and whether it is not better to place the patient recumbent in a favourable position than to keep walking him about.

(*Recueil de Médécine Vétérinaire*, 30th April 1904).

OVARIOTOMY IN MILKING COWS.[1]

BY PROFESSOR DEGIVE, DIRECTOR, BRUSSELS VETERINARY SCHOOL.

I HAVE already stated that if ovariotomy in milch cows, whether suffering from nymphomania or in good health, is not followed by satisfactory results, the cause must be looked for not in the operation itself, but some defect in the manner in which it has been performed, and in the majority of cases this is due to hæmorrhage after division of the ovarian cord. Experience has shown that none of the methods usually employed—viz., Flocard's or Bertschy's—allow of the cord to be divided without a certain amount of bleeding, although this may not be sufficient to be fatal. All the same it may be enough to cause a considerable falling off in the milk and greatly weaken the animal, and my opinion is that the only way to prevent such accidents is by ligaturing the cord.

I have already mentioned the simple and ingenious plan of M. Bertschy, of Guin, Switzerland, who uses an elastic band fastened with a perforated head (*Vide.* fig. 10), and it is curious to notice, even after the numerous descriptions of this method (*Annales de Médecine Vétérinaire*, 1898, pp. 362 and 569; 1899, pp. 88 and 435; 1900, p. 73) that it is so little known. Even M. Moussu, in his work *Traité de Pathologie et de Médecine Opératoire Bovine* is silent about it, although it is the most simple and certain.

It is, however, largely employed in Belgium, and the following practitioners have kindly given statistics:—M.M. Melen of Herve, 313 cases, 280 were milk and 33 fattening cows, out of which 206 were nymphomaniacs and 107 healthy; Jacobs of Lamarckville, 217; Carnepeele of Ypres, 100; Stragier of Warneton, 30; all operated on this year; Fox of Nandrin, 22 ditto; and Jauniaux of Thieusies, 6.

These six gentlemen are unanimously in praise of the elastic ligature over other methods both for milking and fattening animals on commercial grounds, and with nymphomaniacs as a curative measure.

All, however, say that they have seen in a small number of cases recurrence of the sexual period, and naturally this has been attributed to relaxation or insufficient tightening of the ligature, although M.M. Fox and Carnepeele have made post-mortem examinations and have found that the ligature has done its work, and the ovaries either disappeared or degenerated. On the other hand, M.M. Stragier and Jauniaux have noticed that this phenomenon takes place irrespective of whether the oviary has been removed with the ecraseur or ligature, but no matter what the reason is, a sufficient constriction of the cord is essential for the success of the operation.

[1] Paper read before the Brabant Veterinary Medical Society, 15th November 1903.

Before describing the operation it may be advisable to mention the conditions necessary to insure a successful result, especially in the production of milk or meat with healthy cows :—

1.—CONDITION OF THE PATIENT.

The animal should be in a good state of health, the stomach and intestines as empty as possible, and the operation not performed till at least ten or twelve hours after the last feed. In cases of cows where the operation is done to increase the quantity of milk the best period is after the second or third calf, and at least one month after calving, although the elapse of three is better, and although it can be done during the time she is in season it is better not to do so.

If the cow is in calf the operation appears to be of no detriment, parturition taking place as usual without any harm to the calf.

The rectum should be emptied just before operating.

2.—ASEPSIS AND ANTISEPSIS.

The external genitals and neighbouring parts should be carefully washed with soap and water and afterwards with a warm antiseptic, such as a 3 to 4 per cent. solution of creoline or lysol, and the same injected into the vagina, which is thoroughly washed out with the hand. This is particularly important if there are any old or chronic affections of the part. The elastic and other ligatures should be kept for at least twenty minutes in a hot solution of carbolic acid, creoline, or lysol 5 per cent., or corrosive sublimate, 1 per cent., also the instruments.

The operator should carefully clean his nails and wash his hands at first with soap and water, afterwards with a solution of lysol and creoline. With Bertschy, I think it useless to lubricate the arm and hand with oil, as the lysol solution is sufficient.

3.—VAGINAL INCISION.

The incision is made in the upper wall of the vagina an inch or so from the neck of the uterus, as Flocard advises, viz., "in the median line and following the direction of the raphe of that separates the two lateral *culs de sac* at the fundus of the vagina."

If one of these *culs de sac* is larger than the other, the axis of the raphe is deviated from the middle line usually to the right, and in that case the incision will be oblique. Should the raphe be absent, the incision should be made as near the median line as possible with a vaginatome or long scissors.—(Figs. 2, 3, 4, 5, and 6.)

A. *Incision with vaginatome.*—The vagina is dilated with one of the many instruments made for the purpose, Charlier's pattern (fig. 1) being recommended. The instrument is slightly warmed and introduced, the projection being pushed into the orifice of the uterus. It is passed forwards and downwards so as to depress and stretch the wall of the vagina where it is to be divided. The operator then introduces his hand with the scalpel, resting his wrist on the dilator as a fulcrum, and passes it through the wall at a distance of $1\frac{1}{2}$ to 2 inches from the neck of the uterus, and makes an incision about 1 to $1\frac{1}{2}$ inches long, which is afterwards enlarged with the fingers. The sensation of resistance being overcome, and the

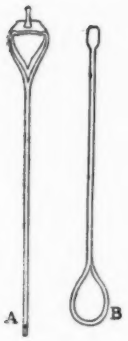


Fig 1

Fig. 2

Fig. 5

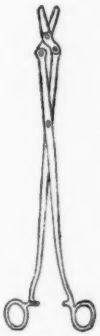


Fig. 6

Fig. 7

Fig. 8

Fig. 9

Fig. 10

Fig. 12

Fig. 3

Fig 4

Fig. 11

Fig. 13

noise of the air entering the abdominal cavity will indicate that the peritoneum has been divided.

In order to avoid accidents, I have had three forms of cutting instruments made (Nos. 2, 3, 4), which, although they look very different, are each furnished with a rounded point that is sharp enough to penetrate the tense vaginal wall, but not sufficient to injure the loose rectum or small intestine which rolls about under it. They can be fixed to an ordinary handle with rivets, or screwed on to a metal one, as in fig. 2. Fig. 3 is the oldest and most common pattern; it has a concealed cutting blade that is brought into operation when desired. Fig. 4 is a sharp hook, much the same as Hertwig's for aponeurotomy of the fascia lata, the point is rounded and there is no danger of injuring the internal organs. No. 3 is a new pattern like a tenotome. It cannot pass too far through the vaginal wall by reason of the guard on the blade.

If the peritoneum has not been sufficiently divided it will give before the finger when pressed upon and tear. Should it feel to be resistent and like a cup over the finger the hand should be withdrawn; force must not be used.

The membrane can be fixed with the long sharp hook, which is held outside by one hand, while the other introduces one of the tenotomes through the wound and divides it. Or it may be grasped with the fingers and the vaginatome, No. 2 used, screwed into the large handle, fig. 7.

B. *Incision with Scissors.*—This method was first brought to notice by Bertschy (*Annales de Médecine Vétérinaire*, 1898, page 569), and is recommended in cases of relaxation or deviation of the vagina. He points out that there may be two totally different conditions, the vagina in one case being relaxed, in the other distended and adhering to the pelvic cavity.

In the first case, which is the simpler, Bertschy operates in the following manner:—He gathers up a fold of the upper wall of the vagina, "either longitudinally or transversely," between the finger and thumb of the left hand, taking care that it is not too close to the neck of the uterus. With the right hand the long scissors are introduced and the fold divided, enlarging the wound and breaking down the peritoneum, if necessary, with the fingers for about 1½ inches. Should the vaginal incision not correspond with the peritoneum a fresh one can be made without any danger. As the mucous membrane of the vagina bleeds very easily, Bertschy then washes it with a solution of lysol, passes his fingers through the wound, and pinches up and divides the peritoneum with the scissors in the same manner as the mucous membrane, the double opening, viz., that of the mucous membrane and peritoneum, being enlarged sufficiently by the fingers.

When the walls of the vagina are so tense as to make it impossible to gather up a fold of the mucous membrane, he makes a small incision with a bistoury on the median line, and enlarges it with the index finger of the left hand. It then is easy enough to introduce the middle one into the wound, to draw up the vagina and slacken the walls, and incise the peritoneum with the scissors.

In practice, however, I have found that this method with the scissors (fig. 6) is not as easy and takes longer than the plan with the vaginatome, and I think it is preferable.

4.—APPLICATION OF THE ELASTIC LIGATURE.

The elastic rings must be of the very best rubber; the diameter

"measured externally" is $\frac{3}{4}$th inch and thickness $\frac{1}{8}$th inch, their elasticity allowing them to be applied without difficulty, even if the ovary is of an abnormal size. Special rings are sold for the purpose, but in default they can be made out of rubber tubing of the proper size and thickness. A length of indiarubber of the same thickness, $2\frac{1}{2}$ to 3 inches, can also be used, the ends being united by a double thread forming a running knot (fig. 10).

The elastic can be passed through the bead with a wire, but it should not be too thin, otherwise it will cut it and it may break when being put round the ligament. Fig. 9 shows the ring passed through the bead, and the thread that holds it till placed in position.

Beads are made for the purpose of steel or aluminium, the latter being preferable, as glass and even hard wood are liable to break. The beads should be small, and both the outside and perforation round and smooth. M. Jauniaux has suggested that the hole should be conical, with the base turned towards the ovary, the elastic being fixed by the narrow part.

The ligature can be easily fixed by the fingers without the use of any instrument. The index and middle fingers of the right hand are passed through the ring, which is disposed of as in figs. 9 and 10, and then passed through the vaginal wound, the ovary being found in the usual manner and drawn backwards by the ligament.

When the ovary has been grasped and brought towards the vagina, a slight amount of traction on the thread will stretch the elastic sufficient to allow the thumb to be put through it and passed over the ligament. The operator then slightly withdraws the hand, taking the bead between the thumb and index finger, while with the others he pulls on the ligature, stretching the elastic to the desired degree, when the bead is slid up and presses against the ligament. When the traction on the cord is withdrawn the elastic contracts on the bead and tightens itself round the ligament.

In order that the necessary degree of constriction should be exerted it is important that the elastic be tight for its entire length, especially at the part where it is in direct contact with the ligament.

The two fingers holding the bead are rested at the tips on the ovarian ligament and at the bulb on the bead, so as to push it forward. This is done with a slight turn of the wrist, and is facilitated by using one with a conical perforation. The tips of the fingers in advance of the bead make a prolongation of the perforation, also act as a point of resistance to stretch the front part of the ring. M. Jauniaux operates by seizing the ovarian ligament with the two or three first fingers of the right hand, pulling on the thread with the left, and pushing the bead forward with the right thumb.

There is yet a third method by means of a ligature tightener (figs. 7 and 11), the end of which is curved, and the opening large enough to allow the bead to pass through.

The ring being put in its place, the thread is passed through the opening in the instrument, which is pressed against the ovarian ligament. The instrument being kept fixed, the thread is pulled upon to stretch the ring sufficiently, and the bead is then pushed with the fingers against the ligament in the opening.

In order to be certain that the bead is secure and prevent the ring slipping, care should be taken that the opening in the beads should not be more than double the size of the elastic when fully stretched. Once

the ligature is properly fixed all that is necessary is to withdraw the thread and allow the ovary to return to its place in the abdomen.

If the ring is too large, or an elastic cord is used as in Fig. 10, the end has to be cut off below the bead. This is easily done with the vaginatome (Fig. 2 A) or the long scissors (Figs. 5 and 6), previously knotting the thread so that the lower part may be withdrawn.

Experience has shown that it is quite unnecessary to amputate the ovary, as the circulation, being strangulated, the organ gradually becomes atrophied without giving rise to any irritation worth speaking of in the peritoneum or abdominal viscera. If the elastic bands and beads are properly sterilised their presence will only give rise to a very slight amount of inflammation, and they will become encysted.

5.—INELASTIC LIGATURES.

Under some circumstances an inelastic ligature has to be used, which is antiseptic silk strong enough to withstand a considerable strain, and which is tied in a double knot (Fig. 13), and should only include the middle and posterior portions of the ovarian ligament, which is short and relatively broad, divided into three portions—(1) an anterior, formed of a double serous fold, strengthened at the free border by muscular fibres and attached to the uterus; (2) a posterior, which is longer and thinner, continuous with the pavilion of the tube; (3) the middle portion, containing the principal vessels of the ovaries.

The ovary can be seized by a forceps such as shown in Fig. 12, which being curved is peculiarly suitable, and the serrated jaws allow of a firm grip being retained, the ovary being brought into the vagina as before described, and the anterior part of the ligament divided with the vaginatome (Fig. 2), the remainder being broken down by pulling on the forceps, whereby risk of damaging the vessels is avoided.

The silk being formed into a ring by the first knot, the two ends are held outside in one hand, while the thumb and first two fingers of the other are passed through it. The forceps previously having been adjusted, the ligature is pushed forward till it is beyond both them and the ovary. The thumb is then placed on the knot, which is pushed forward, the ligature being slightly tightened, which is easily done if one end is tightened and the other slackened.

In order to draw the knot up, the end that has been tightened is given a turn round the finger, while the other is pulled backwards. The first or surgical knot must be tightened as much as possible, and it is as well to wear the finger of an old glove to prevent the silk cutting.

The first knot being fastened, the second one is tied in a similar manner, care being taken that the ends of the silk cross, and are pulled in the proper direction. It is advisable as a precaution to tie a knot at one end of the ligature to avoid confusion; the ends can be cut off close up to the knot.

If the size of the uterus will not permit the ovary being brought into the vagina, the opening must be made big enough to allow of the introduction of the whole hand, the ligature, whether elastic or silk, being applied almost as easily inside the abdomen as in the way described in the vagina.

When the ligatures have been tied, the vagina should be again douched out with some disinfectant to remove any blood that may have accumulated,

and the animal should be kept tied up and short of food for a couple of days.

It is advisable to first operate on one or two organs removed from the body, and then on cows about to be slaughtered, so as to acquire the necessary dexterity, also to take care to provide oneself with proper instruments, viz., a vaginal dilator, a vaginatome (Fig. 2), long hook (Fig. 8), and the ligature tightener (Fig. 11), ligature silk, elastic rings, and beads.

If the silk ligature is used the tightener is not required, but the forceps (Fig. 12) and strong ligature silk are indispensable.

(*Annales de Médecine Vétérinaire*, January 1904.)

ULCERATIVE LYMPHANGITIS RESEMBLING GLANDERS FARCY.

BY M. CH. DARMAGNAC, VETERINAIRE EN SECOND TIARET STUD.

In 1893-94 M. Nocard, in the course of his experiments as to the diagnostic value of mallein, recognised that ulcerative lymphangitis, or "pseudo-farcy," was totally different from true farcy.

In 1897, under the name of "ulcerative lymphangitis," he published an excellent clinical description of the new disease, with the results of his experiments, and it may be of interest to give the following case:—

A six-year-old entire troop horse, of the 6th Chasseur D'Afrique, without any previous medical history, was admitted into hospital on February 20 with a wound on the muscle of the near thigh, caused by a kick from another horse.

On the 24th the wound looked healthy and was healing well, but in the fold of the flank there was an oblong swelling the size of the palm of the hand, very painful on pressure and clearly defined, but without any infiltration into the surrounding tissues. The skin over it appeared to be smooth, but when the hand was run over it, it gave the sensation of grains of wheat being imbedded in it.

On the 25th the swollen surface was studded over with a number of small nodules the size of a pea. Some of these, which were more developed, were of a dark purple colour, and fluctuated on pressure, much resembling the pustules of acne, and giving exit to a yellowish-white discharge when punctured.

On the 26th, 27th, and 28th the swelling increased, being nearly doubled, and extending over the left side of the sheath and scrotum.

Many of the pustules had burst spontaneously and formed a confluent ulcerated wound, $2\frac{1}{2}$ to 3 inches in diameter, with under-run but not indurated edges, and covered with red granulations.

The lymphatic vessels in the neighbourhood of the saphena vein were slightly smaller, but not corded, and the inguinal glands hypertrophied; the general health was good.

Diagnosis.—The symptoms, differing so greatly from farcy, gave rise to much doubt, as I had never seen a similar case, neither had two professional friends whom I had called in in consultation, but microscopic examination and mallein and the inoculation of guinea-pigs and rabbits settled them.

(*a.*) Mallein injection.—No reaction.

(*b.*) Microscopic examination.—The discharge from one of the nodules when stained by Gram's method showed the short bacillus either isolated or united together in masses or sometimes in parallel series.

(*c.*) Inoculation of guinea-pigs.—A drop of the discharge was diluted with 10 cc. distilled water, and 1 cc. injected into the peritoneum of a male guinea-pig. In three days there was swelling of the testicles. On post-mortem examination there was great inflammation of the inguinal canal, and formation of pus in which were a large number of the specific bacillus.

(*d.*) Inoculation of rabbit.—Two drops of the diluted discharge were injected under the skin of the right ear of a white rabbit. The next day the ear was greatly swollen, which extended all over the face and head. It gradually, however, subsided, and on the fifteenth day had entirely disappeared.

Progress.—The disease continued its progress in spite of all treatment. The ulcer increased in size, and extended over the whole of the left side of the scrotum. The edges cicatrised after a while, but a fistula 1½ to 2 inches deep remained at what was the centre. The swelling gradually increased until it implicated the scrotum, sheath, and up to the sternum, with a number of pustules studded over its surface. These burst spontaneously and rapidly healed up, but new ones formed as quickly.

A number of abscesses formed in the subcutaneous connective tissue, some of which coalesced. They healed up badly, leaving fistulæ, with the mouth surrounded with unhealthy granulations. The inguinal lymphatics and glands were swollen, also the sublumbar, which were detected on rectal exploration.

The animal in spite of every care became greatly emaciated, and was destroyed on June 30th.

Post-mortem.—The body was greatly wasted and cachectic. There was an enormous tumour on the left thigh and groin, involving the sheath and scrotum, and extending forward to the sternum. The skin over it was covered with small pustules, from which sanguineous pus could be squeezed from the fistulous openings, which were surrounded with granulations. The skin and subcutaneous connective tissue on section were hypertrophied and indurated, had a characteristic lardaceous appearance, and were studded over with numerous small abscesses, which at the anterior part had coalesced and contained considerable quantities of pus.

The inguinal and sublumbar glands, although enlarged, were not softened, and the sheath and testicles, although surrounded by inflamed tissue, were unaltered. The other organs were healthy, with the exception of the lungs; at the base of the right one there was an old patch of pleuro-pneumonia.

Treatment.—The abscesses were opened either with a cautery or lancet, the fistula laid open and curetted. Various antiseptics, astringents, and emollients were used, also caustics, creosyl, corrosive sublimate, chloride of zinc, oxygen water, borax, tannin, sulphate of copper, tincture of iodine, nitrate of silver, camphorated naphthol, iodoform, &c. &c. Interstitial injections of methyl blue did some temporary good, but it was not permanent; in fact, none of these drugs appeared to have any effect, nor had internal treatment with arsenic or iodide of potassium.

(*Revue Generale de Mèdecine Veterinaire*, 15th March 1904.)

TO OUR READERS.

We beg to announce that with the January number a series of Original Articles is commenced, from the pen of Lieut.-Colonel Nunn, on "Veterinary Toxicology." It is expected to publish these articles in book form at the conclusion of the series.

PART II.—SPECIAL TOXICOLOGY.

BY LIEUT.-COLONEL J. A. NUNN, F.R.C.V.S., F.R.S.E., C.I.E., D.S.O., BARRISTER-AT-LAW, DEPUTY DIRECTOR-GENERAL ARMY VETERINARY DEPARTMENT.

(*Continued from page* 328, *Vol. IX.*)

Elimination.—In animals capable of vomiting this is the chief channel of elimination. After absorption it is deposited in the muscles, intestines, brain, liver, and bones, especially the latter, in which it has been found several months after death. Absorption takes place principally in the stomach, especially when it is empty. It differs from arsenic in that it induces diuresis, and a large proportion is eliminated in the urine and perspiration. Millon and Juveran noted that a considerable amount was deposited in the fat, and that it could pass from the mother to the fœtus.

Symptoms, Acute.—The first symptoms are violent vomiting and diarrhœa with blood, the vomit having a disagreeable smell. There is weakness, syncope, and vertigo, with staggering gait, the animal appearing to be drunk.

At first the pulse becomes thready, and almost imperceptible later on. The diarrhœa then becomes more profuse and frequent, the motions being passed involuntarily, with colicky spasms; a persistent hiccough sets in; the temperature falls below normal, and the mucous membranes turn a livid colour. The animal becomes convulsed, delirious, and the hind quarters are often paralysed, to be followed by death in five or six days. If the patient lives, a characteristic pustular eruption, somewhat resembling variola, appears on the skin and in some cases the mouth.

Chronic.—The symptoms manifest themselves more slowly, and there is almost invariably the characteristic pustular eruption, the animal falling into a state of cachexia. The case may appear to mend, but relapses again, and after lingering for some time, even months, death takes place.

Post-mortem.—There is nothing very specific in the post-mortem lesions. The œsophagus is of a deep red colour, and there are all the usual appearances of gastritis and enteritis, "more particularly in the horse," in the right *cul de sac* of the stomach, and cæcum, the mucous membrane being of a violet or dark red colour. The blood is dark, almost black, and does not coagulate; the liver, lungs, and brain are congested, and the lungs and heart studded over with petechia. Majendie, from this fact, came to the opinion that antimony had a special affinity for the lungs; but further observations have shown his error. In some cases pustules form

on the lining membrane of the stomach, which may even run on to ulceration. If the case is a chronic one, the characteristic pustular eruptions on the skin will be seen; the liver greatly enlarged, and undergoing fatty degeneration. This effect of antimony is taken advantage of by breeders of geese in parts of Germany, the livers of which birds are used for the manufacture of *paté de foie gras*, a portion of oxide of antimony being given them in their food.

Prognosis is bad unless the patient vomits.

Treatment.—Vomiting should be induced as soon as possible, and mucilaginous fluids, tannic or gallic acid, or substances which contain them, viz., oak bark, gall nuts, pomegranate rind, tea leaves, blackberries, or quinine. Diuretics will assist the kidneys in eliminating the poison, but on account of its depressing properties it is well to avoid nitrate of potash.

Analysis.—The organs in which antimony accumulates, viz., the liver, muscles, spleen, bones, and brain, may be at once examined by Reinsch's process without previously destroying the organic matter.

1. *Reinsch's Process.*—The suspected material is boiled with hydrochloric acid, in which a strip of bright copper is placed.

If antimony is present a violet black film will be formed on the copper, which is much less volatile than arsenic, and which, if heated in a test tube, will not give a white sublimate; but this test is only a rough one, and cannot be relied upon.

2. *Ordinary Method.*—The organic matter should not be got rid of by Fresenius and Babo's method, or chloride of antimony is formed, which is volatile; it is preferable to use Gautier's or Naquet's.

100 grammes of the suspected material in small pieces are placed in a new china vessel of 1 litre capacity, with 25 grammes of nitrate of soda and 39 of pure sulphuric acid, then heated over a sandbath, constantly stirring. The material is turned into charcoal containing oxide of antimony, from which it is separated by boiling 10 per cent. solution of tartaric acid. The fluid is filtered and divided into two parts, one of which is submitted to Marsh's, the other to Naquet's test.

A. *Marsh's Test.*—The same apparatus is used in the same manner as when testing for arsenic. The hydrogen burns with a white flame, and gives off oxide of antimony in white fumes, *without* any smell of garlic. Antimony is deposited from the hydrogen much easier than arsenic, and it is usual to find more than one ring in the tube; it may even be deposited in the generating flask if care be not taken to cool it. The film of antimony looks like a piece of tinfoil inside the tube; that of arsenic reminds one of steel. The arsenic adheres tightly to the glass, the antimony is easily detached in fine shreds. The differential tests have been described under the heading of arsenic.

B. *Naquet's Method.*—This plan should be adopted when both antimony and arsenic are suspected, and is based on the property

of arsenated hydrogen, to form with nitrate of silver a soluble arsenate of silver, whereas the antimony and hydrogen gives an insoluble precipitate of antimonide of silver, the arsenic remaining soluble in the fluid, the antimony being precipitated and easily separated. The apparatus consists of a Woolf's bottle, in which the hydrogen is generated by the action of water on an amalgam of sodium. The solution is introduced, and the hydrogen with it forms arsenic and antimony hydrides. The end of the tube fits into a larger one, loosely packed with cotton wool to abstract the moisture from the gas, and to the other end of this is fitted a Liebig's tube, containing a solution of nitrate of silver, which retains the two hydrides—the arsenic in solution, the antimony precipitated in an insoluble form. This is separated through a filter, the filtrate being tested by Marsh's method for arsenic. The precipitate is melted in a crucible, with a mixture of carbonate and nitrate of potash, and turned into an antimoniate. It is then treated with hydrochloric acid and filtered. The filtrate is divided into two portions, one of which is tested in Marsh's apparatus for antimony; the other can be tested as follows:—

1. Sulphuretted hydrogen gives an orange red or red precipitate if the solution is accidulated, depending on the amount of antimony present. Ammoniacal sulphuretted hydrogen gives the same reaction (the formation of yellow sulphide of antimony).
2. Potash and soda give a white precipitate (oxide), which is soluble in excess of the reagent, and the same with ammonia, except that the precipitate is not so soluble.
3. Carbonate of soda and carbonate of ammonia give a white precipitate, that forms slowly, particularly in the presence of tartar emetic.
4. If the solution is free from nitric acid a slip of zinc is turned black. The film is not soluble in cold hydrochloric acid, but is in hot nitric.
5. Oxalic acid gives a white precipitate.
6. Tannine gives a yellow-white precipitate.
7. Phosphate of soda gives a thick white precipitate.
8. Permanganate of potash is decolorised.

COPPER AND ITS COMPOUNDS.

METALLIC copper internally is not poisonous. Pereria mentions some experiments in which ounce doses of filings were given to various-sized dogs without ill effects, although two drachms of the oxide caused vomiting and diarrhœa. In the human being workers in brass and copper are affected by absorption through the skin; but there is no mention of such taking place in animals, and it is not likely that the conditions under which they live would expose them to such risks. Sulphate and acetate of copper are the two

most commonly employed compounds, both being used in medicine, the former also for preserving (pickling) wheat and other grains, and cases are on record where flour and bread have thereby been contaminated. Copper is used to colour preserved vegetables, but this is chiefly of interest to the human toxicologist, numerous cases of such poisoning being recorded.

Copper exists normally in many articles of food, and Gautier[1] gives a long list of such, with the number of milligrammes of metallic copper per kilogramme of each article, of which the following are a few examples:—Wheat, 5 to 10; bran, 14; barley, 10·8; oats, 8·4; carrots, trace; ox beef, 1; ox blood, 0·7; potatoes, 1·8 to 2·8; bran, 11.

Raoult and Breton obtained 6 milligrammes of copper from 400 grammes of liver, and consider that its existence naturally in such comparatively large quantities in the organism explains why such large doses can be tolerated. Galippe has given dogs 3 to 4 grammes of sulphate of copper without any ill result, one taking 98 grammes in 150 days, and if anything improving in condition.[2] One ounce of sulphate of copper has proved fatal to the horse, but if diluted or with a mucilaginous fluid it is much less injurious. Ten grains to two drams subcutaneously are fatal to the dog.—(Law).

The acetate appears to be more active than the other salts, oxalates, chlorides, or citrates; but large doses can be tolerated by even young subjects, and the manufacture of acetate of copper, which is largely carried on by women and children in France, does not appear to injure their health.

Amongst animals Guiraud has seen a case of copper poisoning in cattle fed on food mixed with grape skins and cooked in copper vessels; Saake, in pigs, and Grognier, in the goat, from a like cause Heine and Hergatt report a fatal case from a preparation of copper injected into a fistula. In parts of Wales and Cornwall chronic copper poisoning has been seen in animals grazing in the neighbourhood of smelting works, but even in these cases it is doubtful if the arsenic contained in the fumes is not the real cause.

The larger ruminants appear to be most tolerant, and the dog vomits so easily that he is with difficulty poisoned by copper. The pig and goat appear to be most sensible, and as they prefer acid food, probably the taste of the copper is hidden. The stomach and mouth are the only channels of entrance; externally applied, in animals the effects would be only very local.

Poisonous Dose.—The poisonous dose has not been accurately determined, and, as has been mentioned previously, dogs will tolerate large doses of copper without injury. Ellenburger and Hofmeister found that a sheep died from chronic poisoning in from two to three

[1] Je cuivre et la Plomb dans l'alimentation et l'industrie au point de vue l'hygiene. Paris: 1883.
[2] Galippe; These de Paris, 1873.

months when doses varying from 0·50 to 3 grammes were given daily. Burcq has given dogs from 10 centigrammes to 1 gramme daily of various soluble salts of copper without any ill result following; but with 1 to 4 grammes daily vomiting was induced. After a certain time the animals refused to feed, became emaciated, and died.

According to Feltz and Ritter, in young dogs from 0·45 to 0·50 grammes of acetate of copper per kilogramme of live weight is fatal, and 0·10 grammes in the rabbit.[1]

Absorption and Elimination.—The whole of the surface of the wounds are capable of absorbing copper into the circulation, the amount of which depends on the degree of solubility of the precipitate that is thrown down with albumen.

In the blood it appears to combine with the red corpuscles, and by them to be carried into the tissues, in some of which it is deposited and retained for a long time, viz., the liver, lungs, and kidneys.

A considerable quantity is eliminated by vomiting and purgation; but if absorbed, this process takes place slowly, chiefly in the bile, urine, and perspiration. The form in which copper is eliminated is unknown, but Huseman states that in the fæces it is as sulphide.

Physiology.—The general effects vary with the rapidity with which poisoning runs its course, and can only be seen in the chronic form, in which changes in the blood take place, chiefly in the red globules and hemoglobin. There are also all the appearances of morbid debility. To a slight extent it causes fatty degeneration and nutritive derangement, that ends in progressive cachexia.

Symptoms, Acute.—The symptoms manifest themselves more or less rapidly according to the amount of the poison taken. There is a disagreeable smell about the patient, and a discharge of saliva. The mouth is dry; there is unquenchable thirst and complete loss of appetite. In the human being a burning pain is complained of in the œsophagus, with colicky pains. Animals that are capable of the act vomit matter of a green or blue colour, sometimes mingled with a little blood. There is considerable straining fæces of a black colour being frequently passed. There is great weakness and rigors, difficulty in standing, and the circulation and respiration are feeble. If death takes place, it is from stoppage of the heart's action. This, however, is not the usual termination, as the larger portion of the drug is got rid of by vomiting, and the patient recovers.

Chronic.—The above-mentioned symptoms are present, but develop slowly, and are chiefly dependent on alteration in the nutritive function. Jaundice, albuminuria, and hæmaturia are seen, with gradually progressing emaciation and weakness. The animal may live for a long time before he dies from sheer weakness, but most cases are complicated with gastric intestinal catarrh.

[1] Feltz and Ritter; *Journal de Pharmacie et de Chimie*, 1877.

Post-mortem Appearances.—In acute poisoning the lesions are confined to the intestines, and are those that might be expected as resulting from inflammation, but are more marked in the stomach and small intestines than elsewhere, and may either be diffused or in circumscribed patches.

Trasbot noticed dilatation of the stomach in the horse, and in all cases the lining membrane of the intestines and their contents are coloured blue or green.

In chronic cases the lesions are the same, but not so well marked. The blood is black in colour, the red corpuscles being indented in outline, distorted, and broken down, and the hæmoglobin in part transformed into methemoglobin.

There is chronic hepatitis and fatty degeneration of the liver, with interstitial hemorrhage. The kidneys are inflamed, showing parenchymatous hemorrhagic nephritis with granulations of hæmatine in Bellini's tubes.

There is fatty degeneration of the heart, and the whole body is extremely emaciated.

Notes and News.

THE Dinner of the Army Veterinary Club took place on Friday, 17th June, in the Charles II. room of the Carlton Hotel. About fifty officers were present. Major-General H. Thomson, C.B., took the chair. The guests of the evening were Professor W. O. Williams and Mr. J. F. Simpson. There were also present Colonels F. Duck, C.B., J. C. Dwyer, and W. B. Walters, C.B.; Lieutenant-Colonels L. J. Blenkinsop, D.S.O., F. W. Fordyke, T. A. Killick, J. A. Nunn, D.S.O., G. A. Oliphant, J. Reilly, R. Rowe, and C. Rutherford, C.M.G.; Majors A. F. Appleton, E. R. C. Butler, J. D. Edwards, G. C. O. Fowler, J. K. Grainger, J. Moore, and E. Taylor; Captains F. S. H. Baldrey, A. England, P. J. Harris, H. M. Lonex-Cunyngham, E. E. Martin, A. N. Mason, W. A. M'Dougall, W. A. Pallin, W. D. Smith, F. C. Stratton, G. K. Walker, F. W. Wilson, W. N. Wright, W. B. Edwards, W. Martin Miller, F. H. Shore, and W. J. Tatam; and, Lieutenants E. P. Argyle, G. A. Dibben, H. J. Holness, G. T. Jackson, D. Macdonald, T. A. Nicholas, F. C. O'Rorke, and A. J. Thompson; Lieutenant and Quartermaster R. C. Fenton; and Mr. P. V. Beatty.

THE PALL MALL GAZETTE ON "THE UNIVERSITIES MOVEMENT."

17th June.

THE reader may have observed how often the word *comparative* occurs in the nomenclature of the social sciences. It is a commonplace that all scientific advance depends upon the ceaseless introduction of new methods and of such the comparative method is the most brilliant of recetn examples. In ethics and religion it has proved incalculably valuable, but its worth is as great in fields much less abstruse. It is especially by reason of a recognition of the power of this method that one welcomes the new

movement in the highly practical and apparently insignificant domain of veterinary science. The University of Edinburgh was the first to propose that an academic degree should be granted to veterinary science. There followed the Universities of London and Liverpool, the latter now providing for the future veterinary surgeon a scientific training undreamt of by the physician, still less the "vet.," of half a century ago.

This new movement means, of course, a great many obvious things. It means that the veterinary surgeons of the future will be much better educated, much more competent, much more polished than most of their predecessors. It means that disease among animals will be much more successfully prevented, vast sums being saved to the community in this manner, while the spread of certain diseases from the lower animals to man will be much less extensive, and will ultimately be entirely arrested. But it means much more. The thorough training of the veterinarian in physiology and pathology will mean an immense acceleration in the advance of the comparative method in the whole realm of biology.

C. W. S.

Reviews.

The Rhodesian Agricultural Journal for April is to hand, and if present prospects are fulfilled the colony will be in the proud position of being able to export large quantities of surplus food stuffs, and not only that, but the prospects of growing very high class cotton are said to be excellent.

It may almost be thought that there are greater riches *in* the soil of Rhodesia than there are *below* the soil.

Among the evils which interfere with its agriculture is a weed known as the "witch-weed"—*striga coccinia*—a true parasite, which lives on graminaceous roots, and ultimately destroys the plant. Owing, however, to the researches and experiments of Mr. Claude Fuller, Government Entomologist, Natal, means can now be adopted to prevent the ravages of this pest.

We also note reports on "African Coast Sickness" and "Horse Sickness" by Professor Koch, and reports on forestry, entomology, &c. &c., all of which are of great interest.

Epizootic Lymphangitis. By W. A. Pallin, F.R.C.V.S., Captain A.V.D. Williams & Norgate, 14 Henrietta Street, Covent Garden, London.

A most opportune publication—When we have a scare throughout the country and every one is asking what is it? and how do you recognise it in its earliest stages?—Captain Pallin's work supplies the answer.

The thanks of the profession are due to the author for having gathered the history of the disease and placed it before us in such concise form, for having given us such good illustrations of the disease in its various forms, and for having indicated the best lines to follow when one comes across an outbreak.

VETERINARY PATHOLOGY.—Friedberger and Fröhner. Translated by Capt. M. H. HAYES, F.R.C.V.S., Vol. I. 4th edition. Hurst & Blackett, London.

The work on Veterinary Pathology by Dr. Friedberger, Professor of Veterinary Medicine in the Royal Veterinary School, Munich, and Dr. Fröhner, Professor of Veterinary Medicine in the Royal Veterinary School, Berlin, is not only the text-book on the subject in Germany, but has been translated into both French and Russian. It is true that another English translation was made in 1895 by Dr. W. L. Zoill, of Philadelphia, but it is not an authorised one.

The volume in question deals with the Infective, Miscellaneous Infective, and Chronic Constitutional Diseases of the Domestic Animals, together with a chapter on certain Foreign Diseases, such as Surra, Tsetse Fly Disease, and South African Horse Sickness. There is also an exceedingly useful chapter on Bacteriology, which gives the main points and explains the technical terms used in that branch of Medical Science by Dr. G. Newman, M.D., D.P.H., which will be of the greatest use to those who are not specialists, together with tables for the conversion of the Metrical System of Weights and Measures used on the Continent into the English Standard.

We trust the translator will pardon us suggesting that this excellent volume might have been far more complete had at the beginning of each section the German and French names of the disease been given, and the translator might see his way to making this small addition in the second volume. The book is thoroughly up to date, well printed in clear type, and the get-up a credit to all concerned. We shall look forward with pleasure to seeing the remainder of the work which will be a valuable addition to English Medical Literature, both Human and Veterinary.

Communications, Books, Journals, &c., Received.

Agricultural Journal (Cape of Good Hope); Berliner Thierärztliche Wochenschrift; La Clinica Veterinaria (Milan); Deutsche Thierärztliche Wochenschrift; Tannoform in Veterinary Medicine (March); The Sanitary Journal; Scottish Medical and Surgical Journal; Veterinary Record; La Riforma Veterinaria; Le Mois Scientifique (Paris); L'Echo Vétérinaire (Liège); Annales de Médecine Vétérinaire (Brussels); Johns Hopkins Hospital Reports; Journal of Comparative Medicine and Veterinary Archives; Recueil de Médecine Vétérinaire; Gazette Médicale de Paris; Modern Medicine; Johns Hopkins Hospital Bulletin; Il Veterinario di Campagna (Moncalleri); Le Bulletin Vétérinaire (Orleans); Revista de Medicina Veterinaria (Bucarist); La Revista Veterinaria (Buenos Aires); Zeitschrift für Fleisch und Milchhygiene (Berlin); Buletinul Societatii de Sciinte diu Bucuresci-Romania; The Meat Trades Journal; The Dental Record.

ERRATA.—We regret that a printer's error appears in a case of "Abscess of the Liver in a Horse" reported by Captain England, A.V.D., in the *Veterinary Journal* of June 1904, page 316.

In line 11 "was" should read "were," and in line 12 "stimulating liniment" instead of "skin liniment"; and in Major Taylor's article "muzzle" was printed "nozzle" on page 314.

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